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TREATMENT OF THE ACUTE NASAL AND SINUS INFECTION

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Modern rhinology is constantly undergoing major changes as our knowledge of nasal physiology and histopathology increases. The more we learn of nasal function, the more importance we attach to the nose as an organ of defense. The membranes which line the nasal and sinus cavities are equipped with mechanisms which act primarily to prevent invasion by pathogenic organisms, and in the event of invasion by such organisms, act secondarily to throw them off. Pathogens gain a foothold in the nasal mucosa only when a breakdown in the muco-ciliary stream eliminates the protective film of mucus, at least in spots.

By far the most common means of disrupting this defense mechanism is body-chilling. This produces intranasal vasoconstriction, with lowered temperature and a blanching of the membranes which cover the intranasal structures. As the circulation is diminished, there is a cessation of glandular activity; the nose becomes dry and the cilia cease to beat.

A return of intranasal function will occur with the application of heat, either locally or to the periphery; or, if the individual's resistance is good, a compensatory action re-establishes nasal function in ten to twenty minutes in spite of continued exposure to cold.

General Measures

All writers are agreed that patients with acute rhino-sinusitis do better when put to bed in a warm, well moistened room, and that simple common-sense treatment hastens recovery and prevents complications. Energetic local treatment and the use of laxatives are avoided, but measures to increase the comfort of the patient are introduced early and maintained throughout the course of the disease. Codeine and other drugs are used for relief of pain, and decongestants are instilled or packed into the nose to enlarge the breathing space and to promote drainage.

Intranasal Medication

As a result of the awakened interest in the ciliated mucosa as a defense membrane, medicaments now used in the nose are isotonic and non-detrimental to ciliary activity. They should also be non-irritating, with a *p*H slightly on the acid side. Many of the preparations which have enjoyed a wide usage in the past do not conform to these requirements. Included in this list are mild silver proteins and medicaments containing oil or any irritating drug.

The incorporation of sodium sulfathiazole in nose drops was unfortunate. Most such solutions are extremely irritating to the nasal mucosa, and have contributed much to the promotion and continuation of nasal and sinus infection. Happily, they are at last on the way out. The use of penicillin and other antibiotics in nose drops has proved disappointing. The administration of penicillin by inhalation is also of questionable value in acute infections.

Inhalants such as benzedrine have no therapeutic value. They afford temporary comfort and are apparently not harmful to

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the cilia, but Fabricant has found that a few whiffs elevate the *p*H of the nasal secretions. This increased alkalinity in itself tends to retard recovery.

Ephedrine, ½ of 1 per cent in saline solution, and some of the synthetic sympathomimetic drugs now available, such as neosynephrine, ¼ of 1 per cent, are effective nasal vasoconstrictors. The solution is best administered by instillation, with the patient in the head-low position of Proetz, or in the side posture described by Parkinson. A dropper-full of the solution is placed in each nostril, where it remains for thirty to sixty seconds. The sinus openings are reached with the patient in either position; drainage and ventilation are promoted, and the patient enjoys an increase in breathing space which may last several hours. It should be stressed, however, that vasoconstrictor drugs have a limited use in the treatment of nasal and sinus infections, and that in many cases they are actually harmful. There is a tendency among rhinologists to prescribe these solutions sparingly. They may be given to provide temporary relief in cases of extreme nasal blockage, but their prolonged use is discouraged, and seldom, if ever, are they indicated in chronic infections.

Displacement (Proetz) therapy

This method of sinus irrigation is not advocated for use in the early acute stages, and is most effective in persistent acute or chronic cases.

Nasal packs

Tampons saturated with mild silver protein solution (argyrol or neosilvol), known as Dowling packs, have enjoyed a wide use in the treatment of all stages and varieties of nasal and sinus disease during the past several years. These packs are harmful in the acute stages and are of no value in the chronic stage. In subacute infections their irritating action produces a flow of mucus, which some think of value. The same effect could be produced by a few whiffs of snuff, however. The principal objection to the routine use of argyrol packs is that physicians who commonly use this method apply it to all cases, regardless of the diagnosis, and as a consequence are prone to develop loose diagnostic habits. Far better is the practice of first determining as nearly as possible the exact location of the infection, and then directing all attention to that area —not to the nose in general.

In acute infection, packs saturated with a weak solution of cocaine (1 per cent) or ephedrine may be inserted in the middle meatus while the patient receives infra-red therapy for twenty to thirty minutes. This procedure combines two non-irritating therapeutic measures and affords temporary relief, particularly in the cases of acute congestion associated with pain.

Internal Medication

The sulfonamides and penicillin taken internally have proven of little value in uncomplicated upper respiratory infections, or in those without fever. For this reason, and because of their masking effect, the routine use of these drugs in the treatment of acute sinusitis is inadvisable. They have, however, been found to be of value in upper respiratory infections with complications and may be used effectively in cases of acute spreading infection with impending intracranial complications.

Vitamin therapy

Large doses of vitamin C have been found to be of distinct aid in the early stages of acute upper respiratory infections. The dosage recommended is 1 Gm. per day.

Foreign protein therapy

Injections of foreign protein are followed by reparative cellular changes, and may be given daily with effective results.

Physical Therapy

The instruments of physical therapy which have been perfected largely since World War I have, during the past few years, been applied with some reported success in the treatment of diseases of the nasal sinuses. Various claims made from time to time by proponents of physical therapeutic measures, however, do not always stand the test of carefully controlled experiments.

The enthusiasm so often evidenced with the advent of new forms of therapy, instruments, and techniques is often based on exaggerated claims by the author or designer, who is unable to back them up.

Thermotherapy

Heat applied to the face has been found to be of distinct value in the early stages of nasal or sinus infection. Used in the form of

infra-red rays, it relieves pain and combats infection.

Short-wave therapy

It is generally thought that short-wave diathermy is helpful, when employed with other therapeutic measures. Little may be expected from its use alone; for, so far as is known, it has no physiologic effects other than those attributable to heat.

Roentgen therapy

This is used in the acute cases to relieve pain and is thought by some to be of aid in combatting infection. This form of therapy, like the others described above, is at best only an ancillary measure. Little improvement may be expected when any form of physical therapy is used alone in the treatment of sinus disease.

Other Intranasal Procedures

Fracture of the middle turbinate

In many cases of acute inflammatory conditions involving the anterior group of sinuses, the middle turbinate completely blocks the drainage outlets. This obstruction may still exist after the acute swelling has subsided. In these cases the middle meatus may be unblocked by fracture of the turbinate toward the septum. This simple operation is undoubtedly the most valuable single surgical procedure available in rhinology.

Irrigation

This is by far the most effective means of ridding a cavity of accumulated secretions. The importance of sinus drainage is more thoroughly appreciated when the nature of the inflammatory exudate is understood. The large numbers of polymorphonuclear leukocytes, or pus cells, present contain powerful proteolytic enzymes. The purpose of these enzymes is to dissolve phagocytized bacteria. In a stagnant exudate, however, such as may be found in the antrum, these pus cells disintegrate. The proteolytic enzymes which are released will irritate any tissue with which they come in contact. The extremely irritating action of these enzymes is illustrated by the maceration of the skin that takes place at the margin of drainage fistulas. The symptoms of toxemia which follow the absorption of these toxic products through the injured mucous membrane may be eliminated only by the removal of the exudate.

The question often arises as to how soon after the onset of an attack of acute sinusitis one may irrigate. No rule can be applied to all cases, because of the variable factors by which we should be influenced and guided. The attitude of the patient, his psychic make-up, and his natural resistance are determining factors. Some individuals resign themselves to their disease and are content to stay in bed and submit to palliative measures. Others are less patient and are not satisfied with milder methods of therapy. In these instances, and in those individuals who have had previous attacks, irrigation is the usual procedure as soon as the swelling of the tissues has subsided and the temperature has returned to normal. In the average nonallergic patient the acute swelling of the tissues usually begins to recede in two or three days. We may then expect an open ostium and a successful result from irrigation. Previous to that time, when swelling of the ostial lining and of the mucosa of the middle meatus completely or almost completely blocks the drainage area, irrigation does more harm than good by adding trauma to inflamed tissues without removing purulent material. Irrigation with pressure should not be carried out.

Irrigation of the *maxillary* sinus may be effected through the inferior or middle meatus. The natural route is becoming more popular each year as more rhinologists become acquainted with its possibilities. A common practice of many rhinologists at the present time is to attempt first to reach the sinus by way of the natural opening or an accessory opening; if these routes are not easily accessible, they carry out lavage through a puncture made in the membranous area of the middle meatus. Those who practice this technique rarely, if ever, find it necessary to break through the bony wall of the inferior meatus.

The *sphenoid sinus* may be irrigated through the natural ostium, which is accessible in 85 per cent of the cases, or through a puncture opening in the thin anterior wall. Acute sphenoiditis is scarcely ever recognized. An infectious process which involves this cavity usually includes other sinuses, and clinicians commonly overlook the sphenoid in their zeal to attack the more obviously infected cavities of the anterior group. In these cases the sphenoid demands attention only when treatment of the other sinuses fails to produce a cure.

The *frontal ostium* may be reached as easily as the ostia of the other cavities. Unfortunately, rhinologists in general fail to avail themselves of this fact, and many cases of frontal sinusitis which could have been cleared up with one or two irrigations are allowed to persist until the frontal sinuses become chronically suppurating cavities.

Emergency Drainage Openings

Acute fulminating cases of sinusitis occasionally are of such a severe nature as to require immediate drainage. This statement applies particularly to infections of the frontal and sphenoid sinuses and less frequently to the antrum and ethmoids. In these fulminating cases irrigation by the usual methods is not feasible; tissue edema blocks the outlets and prevents a return flow of the irrigating solution. In case immediate removal of pus is deemed necessary, an opening should be made which is large enough to accommodate not only the intake and outflow of solution, but large clumps of exudate as well. This form of drainage is established through emergency trephine openings. In case the antrum is involved, the opening is made in the inferior meatus; in frontal sinusitis it is placed in the floor of the sinus through an external incision; and in case the infection is located in the sphenoid sinus, the opening is made in the anterior wall.

This form of treatment may be regarded in a sense as a life-saving measure, especially when applied to fulminating infections of the frontal or sphenoid sinuses. The procedure is carried out with a minimum of trauma and without further manipulation. Irrigation through the opening may not be necessary or advisable until the patient's resistance is increased and the temperature begins to recede.

Therapy with the sulfonamide drugs and penicillin may be of great help in severe sinus infections; yet cases are constantly reported which terminate fatally despite the judicious employment of these drugs. Patients with intracranial complications need the best available medical and surgical supervision, and all therapeutic measures may prove worthless if proper drainage of all involved sinuses is not established and maintained.

Summary and Conclusions

In the early stages of an attack of acute nasal or sinus infection, the ideal treatment includes rest in bed in a warm, moist room. The patient's symptoms should be alleviated, and measures adopted which will tend to prevent complications and to hasten convalescence.

Vasoconstrictors are commonly prescribed for local use in all stages of acute nasal infections. Medications for this purpose should not be detrimental to ciliary activity and should have a *p*H between 5.5 and 6.5. A 0.5 per cent solution of ephedrine in normal saline fulfills these requirements. It is best administered by instillation, with the patient in a head-low position.

Tampons of mild silver protein having a *p*H above 8 are irritating to the nasal mucosa and have no place in the treatment of acute rhinitis or sinusitis. Five per cent sodium sulfathiazole solutions, with a *p*H of 10 or over, are mucosal irritants, and their local use for nasal and sinus infections should be discouraged.

Short-wave diathermy and roentgen therapy are ancillary forms of treatment which afford little more than symptomatic relief. Infra-red rays, injections of foreign protein, and vitamin C in large quantities have been proven to be beneficial in the treatment of patients suffering from acute rhinosinusitis in its early stage. Later, after the acute edema has subsided, available measures include fracture of the middle turbinate, the Proetz displacement treatment, and irrigation.

Irrigation of a sinus is the most effective means available for ridding the cavity of accumulated secretions. There is ample justification for instituting drainage when the exudate is extremely toxic. Irrigation may be carried out with comparative safety after the acute edema has receded. The procedure is then associated with less trauma, the drainage passageway is less likely to be blocked, and the tissues respond better to the removal of accumulated exudate.

Emergency openings are placed in the walls of sinuses in cases of severe infection. with serious complications or threatened complications. The establishment of immediate drainage, along with chemotherapy and the administration of penicillin, may be the means of producing a cure in a case which otherwise might have a fatal termination.

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THE TREATMENT OF PEPTIC ULCER

With Special Reference to Acute Massive Hemorrhage

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Except for certain complications requiring surgical intervention, the treatment of peptic ulcer during the past thirty years has passed largely into the hands of the medical man. Until recently we no longer considered operating merely because the patient could not or would not stay on his diet. When complications made partial gastric resection obligatory, we impressed on the patient both preoperatively and postoperatively that operation is not a cure-all, that marginal ulcers can develop even after a resection, and that a regimen of medical treatment for ulcer must be followed indefinitely.

Recent Developments in the Surgical Management of Peptic Ulcer

Within recent years there have been developed two operative approaches, both aimed at reducing the hyperacidity of the stomach, which may offer a means of treating surgically the underlying condition which predisposes to peptic ulcers, instead of waiting for the so-called surgical complications to arise.

One of these operative approaches to the problem of gastric hyperacidity is an attempt to reduce the blood supply to the stomach by multiple arterial ligations. We have had no experience with this procedure, and have seen only one report in the literature.

The second of these approaches, with which we have had considerable experience, is the interruption of the vagus nerve supply as advocated by Dragstedt[1]. While interruption of the vagus fibers had previously been used, the operation was done below the diaphragm, and it was very difficult to determine the percentage of the nerve fibers which had been sectioned; this procedure was finally abandoned. With the development of thoracic surgery, the transthoracic approach has become quite feasible; the vagus nerve branches about the esophagus can be divided with much greater assurance that most of the fibers have been severed, and a long segment can be removed to prevent regeneration.

This operation affords immediate relief from pain, marked reduction in the gastric acidity, and a great decrease in the motility of the stomach musculature. There is some tendency toward gastric retention, however —particularly if cicatricial narrowing of the pylorus is present. In certain of our cases it has been necessary to do a pyloroplasty or a gastroenterostomy to relieve this obstruction. On the other hand, these patients, even though their stomach is slow in emptying, can eat a great variety of foods; their pain is relieved, they gain weight, all are enthusiastic in evaluating their improvement, and apparently their ulcers heal.

If the permanent results bear out this dramatic early improvement, it is not too much to expect that this operation will be carried out on an increasingly large number of patients with ulcer before complications have developed. At the present, however, it must be emphasized that this method of therapy is in the experimental stage and that the operation is performed only in cases where surgical treatment is indicated. It should not be used unless one is prepared to follow through with careful and prolonged studies to determine the final results and to make them available in evaluating the permanent place of this operation in surgery of the stomach.

Surgical Complications of Peptic Ulcer

The greater part of our experience with peptic ulcers during the past fifteen years has been in treating the so-called surgical complications. These are:

1. Obstruction.
2. Perforation.
3. Intractable pain.
4. Recurrence or reactivation of an ulcer.
5. Hemorrhage.

Obstruction

Obstruction may be caused by edema, cicatricial stenosis, or a combination of the two conditions. When it is due to edema, any regimen which reduces the irritation and favors healing of the ulcer may lead to rapid relief of the obstruction. When there is a fibrous constriction of severe degree, oper-

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1. Dragstedt, L. R.: Vagotomy for Gastroduodenal Ulcer, Ann. Surg. 122:978-989 (Dec.) 1945.

ative interference is necessary.

The procedure most commonly used in the younger patient is a gastric resection, preferably with removal of the ulcer. At times, however, a duodenal ulcer may be left in if all the antral mucosa is removed. For gastric ulcers near the cardia, where resection is difficult and carries a relatively high mortality, it has recently been advocated that the gastric acidity be reduced by resecting 50 to 65 per cent of the lower portion of the stomach, without disturbing the ulcer. It is claimed that, following such a procedure, the ulcer heals.

In older individuals with a chronic obstruction and low gastric acidity, gastro-enterostomy has a definite place and will give good results in a high percentage of cases. The pyloroplastic operations have largely been abandoned, but in certain patients—particularly where there is retention from duodenal obstruction following a vagotomy, a pyloroplasty seems to be the operation of choice.

Following a resection the stomach may occasionally be anastomosed to the duodenum. In one of our cases, after a total gastrectomy, the duodenum was anastomosed to the esophagus. As a general rule, however, it is best to bring the jejunum up anterior to the transverse colon and attach it to the end of the stomach. Care must be taken to avoid constricting the intestine proximally or distally where it is attached to the stomach; the operator should guard against tension from too short a loop and against kinking and angulations. If these precautions are taken, the obstructions following resection can usually be avoided.

Perforation

Perforation into the free peritoneal cavity is always an acute abdominal emergency requiring immediate surgery. The treatment of choice in the presence of peritoneal soiling seems to be immediate closure with minimal surgery. Care should be taken to see that the ulcer is well closed, bringing peritoneum to peritoneum without undue tension. The outer layer of sutures may have to be placed in the tissues some distance from the ulcer in order to avoid the indurated friable tissue about the ulcer, which may not invert and in which the sutures will not hold.

Intractable pain

Intractable pain is not infrequently due to a perforating or perforated ulcer which does not enter the free peritoneal cavity, but is on the posterior wall of the stomach or duodenum and enters the pancreas. When such an ulcer does not respond to medical treatment, resection of 50 to 65 per cent of the stomach, with or without removal of the ulcer but with removal of all the antral mucosa, is indicated.

Recurrence or reactivation of an ulcer

Recurrent or reactivated ulcers, including marginal ulcers, may need to be treated by a suitable resection of the stomach; if a previous anastomosis has been performed, such a resection should include it. At the present time, however, we favor a vagotomy for recurrent or reactivated ulcers; the performance of further surgery on the stomach would then depend on the presence or absence of symptoms of obstruction.

Where there is a marginal ulcer with a gastro-jejuno-colic fistula, it is necessary to take down the anastomosis, close the opening in the colon, and make a new opening between the stomach and the intestine after additional resection. In cases where a gastro-enterostomy had been performed for a duodenal ulcer which has since healed, the channel through the duodenum may be restored. Under any of these conditions it seems to me that a vagotomy might be worth trying, as a supplementary procedure to make further ulceration less likely.

Hemorrhage

The treatment of patients with perforation, obstruction, and intractable pain has been largely standardized, and there is little argument about the procedure indicated. On the other hand, there is still much discussion as to the treatment indicated in the presence of an acute massive hemorrhage. In a patient who has had repeated attacks of hemorrhage, I would advise an interim vagotomy and careful observation as part of the experimental approach toward a solution of this difficult problem.

A review of the literature shows that about 20 to 25 per cent of all patients with peptic ulcers develop the complication of hemorrhage from the ulcer site. The mortality reported in groups of patients with this complication treated by nonoperative means varies from 1 per cent (Meulengracht) to 58 per cent (Ross), with other authors reporting mortality rates as follows:

Allen[2] 14.5 per cent; Bohrer[3] 17.5 per cent, Goldman[4] 17 per cent, and Gordon-Taylor[5] 8.1 per cent. It is evident that the mortality from the medical regimen can be reduced by referring for surgery those patients who do not respond favorably to treatment by non-operative means. This policy has been followed at Duke Hospital, where the mortality between 1940 and 1943 was 1.5 per cent in patients on the medical regimen and only 9 per cent in patients referred for surgery after medical treatment had failed. The mortality in the group considered as a whole was 2.6 per cent.

The effect of age on mortality. It is generally believed that patients over 50, especially if they have arteriosclerosis, do not withstand hemorrhage under a non-operative regimen nearly so well as do younger ones. Allen[2] reports that 18 of the 20 deaths in a group of 138 patients with acute massive hemorrhage occurred in individuals over 49 years old. Blackford and Williams[6] report a mortality rate of 30 per cent in patients over 50 suffering from duodenal hemorrhage.

Schenken, Burns, and Maes[7] report that autopsy records on 19 patients dying from duodenal hemorrhage showed that 58 per cent had arteriosclerosis and hypertension.

Medical management. There has been a gradual swing from the old, time-honored, and almost universally accepted "conservative starvation" medical management, with a mortality ranging from 4.2 per cent to 58 per cent, to a regimen consisting of a balanced bland diet supplemented by small doses of morphine, iron compounds, small transfusions, and an antacid-antispasmodic mixture. In 1906 Lenhartz reported a series of 146 patients treated by dietary measures, with a 2.14 per cent mortality. In 1927 Andresen reported a method of treatment using liberal feedings of a gelatin-water mixture, but did not give any statistical data. Meulengracht in 1934 reported a 1.2 per cent mortality in 251 patients treated by a balanced selected diet supplemented with medicines and transfusions. It was his report which had the greatest influence in popularizing this balanced dietary method of treatment. Numerous articles on the subject have since appeared, reporting mortality rates ranging from 0 to 11.2 per cent.

The rationale of the Meulengracht regimen is that the gastric secretions are "fixed" by the food, thus preventing digestion of the clot at the ulcer site; hunger contractions are diminished, and the tone of the stomach musculature is increased. At the same time a high-protein diet replaces the protein lost by hemorrhage. The ingestion of protein and carbohydrate protects the liver and prevents acidosis, and the mental attitude of the patient is greatly improved.

Surgical management. During this same period, the trend among surgeons has been toward earlier and more radical operative treatment. Finsterer[8] in 1919 first advocated early surgical intervention in patients with severe hemorrhage from ulcer. He reported 78 cases in which operation was performed within the first forty-eight hours, with a mortality of 5.1 per cent; in 74 patients operated on after forty-eight hours the mortality rate was 29.7 per cent. Gordon-Taylor[5] reported an operative mortality of 19 per cent among 32 patients operated on between 1919 and 1931.

Allen and Benedict[9] reported 138 cases of acute massive duodenal hemorrhage, with 12 deaths under the non-operative treatment. Eight were operated on after every other method of treatment had failed, and all died.

More recently many series of cases treated by operation have been reported, with an average mortality of 18 per cent. Bohrer[3] has made the largest single report by collecting data from surgeons all over the United States. In 1008 cases treated medically the mortality was 11.3 per cent and in 112 cases treated surgically the death rate was 17 per cent. Walters and Cleveland[10] report 135 cases of partial gastrectomy for bleeding ulcer, with a mortality of 10 per cent; they do not differentiate between chronic and acute hemorrhage, however.

Graham believes that a patient over 50

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3. Bohrer, J. V.: Massive Gastric Hemorrhage, with Special Reference to Peptic Ulcer, Ann. Surg. 114:510-525 (Oct.) 1941.
4. Goldman, L.: The Problem of Bleeding Peptic Ulcer, Am. J. Surg. 40:545-551 (June) 1938.
5. Gordon-Taylor, G.: The Attitude of Surgery to Haematemesis, Lancet 2:811-815 (Oct. 12) 1935.
6. Blackford, J. M. and Williams, R. H.: Fatal Hemorrhage from Peptic Ulcer, J.A.M.A. 115:1774-1776 (Nov. 23) 1940.
7. Schenken, J. R., Burns, E. L., Maes, U.: The Role of Hypertension and Pancreatic Erosion in Massive Fatal Hemorrhage from Gastric and Duodenal Ulcers, Surg., Gynec. & Obst. 74:1058-1060 (June) 1942.
8. Finsterer, H.: Surgical Treatment of Acute Profuse Gastric Hemorrhage, Surg., Gynec. & Obst. 69:291-298 (Sept.) 1939.
9. Allen, A. W., and Benedict, E. B.: Acute Massive Hemorrhage from Duodenal Ulcer, Ann. Surg. 98:736-749 (Oct.) 1933.
10. Walters, W. and Cleveland, W. H.: Results of Partial Gastrectomy for Bleeding Duodenal, Gastric, and Gastrojejunal Ulcer, Ann. Surg. 114:481-497 (Oct.) 1941.

Table 1

Incidence of Hemorrhage in Patients with Peptic Ulcer Admitted to Duke Hospital between 1930 and 1943

	Number	*Percent.*
Total patients	1340	100
With hemorrhage	186	14
With severe hemorrhage (Hgb. 50% or lower)	77	5.75 (41.4% of 186)

years of age with a hemoglobin as low as 50 should be considered for surgery. Loher, Balfour, and Bevin reserve surgery for those patients in whom medical treatment has failed, or who have complications which are definite indications for surgery.

Of the many surgical procedures which have been employed for this condition, the operation of choice is a partial gastrectomy with removal of the ulcer. Operation should be preceded, accompanied, and followed by the transfusion of large quantities of blood.

With or without surgical intervention, the present trend is toward earlier and more extensive use of blood transfusions. There seems to be less fear now that a transfusion will raise the blood pressure sufficiently to cause a recurrence of the hemorrhage.

The Treatment of Patients with Peptic Ulcer Complicated by Massive Hemorrhage at Duke Hospital

Recently we have examined the records of all the patients treated for peptic ulcer in the Duke Hospital between the years 1930 and 1943 (table 1). These statistics do not include any of the ambulatory patients not admitted to the hospital. Out of a total of 1340 patients with peptic ulcers admitted during this thirteen-year period, 186 (14 per cent) had the complication of hemorrhage, either mild or severe. Seventy-seven, or 41.4 per cent of the patients with bleeding, had a hemoglobin of 50 per cent or lower and were classed as cases of severe hemorrhage. Sixty-seven of the patients were males and 10 were females. There were 55 white and 22 colored patients. The age distribution is shown in table 2.

Immediate results

All of these 77 patients with severe hemorrhage were treated medically on a dietary regimen supplemented by medicines and blood transfusions. Twelve of these did not respond satisfactorily. One, a colored patient aged 23 who had been bleeding for

Table 2

Age of Patients with Peptic Ulcer Complicated by Severe Hemorrhage

Age	*No. Patients*	*Medically Treated*	*Surgically Treated*
Over 45	33	33	5
Under 45	44	44	6

three days, entered the hospital with a hemoglobin of 17 per cent and a carbon dioxide combining power of 17 volumes per cent; he died without being referred to surgery. The other 11 patients who continued to bleed were referred to surgery within five to twenty-one days after the onset of the hemorrhage, and after it seemed evident that they would not stop bleeding without surgical intervention. These 12 patients were the immediate failures in the medical regimen (table 3).

Table 3

Immediate Deaths and Failures with the Medical and Surgical Treatment of Peptic Ulcer with Severe Hemorrhage

	No. Patients	*Deaths*		*Other Immediate Failures*	
		No.	*Percent.*	*No.*	*Percent.*
Medical regimen	77	1	1.3	11	14.29
Surgical treatment (after failure of medical regimen)	11	1	9.0	0	0
Combined medical and surgical groups	77	2	2.6	0	0

Of the 11 patients who failed to respond to a medical regimen and who were treated surgically, 10 survived and 1 died, giving a mortality of 9 per cent. At least 8 of these 11 patients gave a history of preceding episodes of bleeding (table 4). The patient who died had a bleeding ulcer near the ampulla of Vater, so that it could not be removed without prohibitively extensive surgery. At the time of operation the bleeding had stopped, and it was the judgment of the operator that an exclusion type of operation would avoid reactivation of the hemorrhage. Following the operation, however, death resulted from the loss of blood. Autopsy revealed that the hemorrhage came from an open artery in the bed of the ulcer.

The two most important factors in the surgical treatment of these patients seem to us to be the administration of large quantities of blood, and the performance of operation as expeditiously as possible. The amount of blood given immediately before, during, and following operation in these patients varied from 1500 to 7500 cc. (table 4).

Table 4

Results of Operations for Bleeding Peptic Ulcer with Severe Hemorrhage

Case	*Race*	*Sex*	*Age*	*Hgb. (Percent.)*	*Duration of Hemorrhage*	*Previous Hemorrhages*	*Blood Given*	*Type of Operation*	*Result of Operation*
1	W	M	21	39	11 days	3	2500	RES	Improved
2	C	F	48	50	5 days	1	1500	PGE	Improved
3	W	M	41	50	14 days	1	2000	RES	Improved
4	W	M	59	48	10 days	2	2000	PGE	Improved
5	W	F	37	48	8 days	0	5000	RES	Died
6	C	M	37	37	15 days	2	5000	RES	Improved
7	C	M	34	38	?	?	2500	PGE	Improved
8	C	M	41	35	21 days	1	7500	RES	Improved
9	W	M	57	41	7 days	0	2500	RES	Improved
10	W	M	41	30	?	1	3500	PGE	Improved
11	W	M	19	50	8 days	1	2000	RES	Improved

W —White
C —Colored
M —Male
F —Female
RES—Subtotal gastric resection
PGE—Posterior gastro-enterostomy

In 4 of these patients only a posterior gastro-enterostomy was performed. These patients were among the earlier cases, but the results were satisfactory. In one of these patients a carcinoma of the stomach was suspected, but when exploration was done five weeks later the ulcer had healed. A fifth patient in this series had a posterior gastro-enterostomy, but continued to bleed and became delirious; resection was performed with the patient in this condition, and he recovered.

Follow-up study

Sixteen of the 77 patients died of causes not related to the ulcer and 10 could not be followed, leaving a group of 49 who were followed for three to sixteen years. Forty of these had been treated exclusively by medical means, and 9 surgically after medical treatment failed. Table 5 shows that of the medically treated patients 3 (7.5 per cent) died of subsequent episodes of hemorrhage, 6 others (15 per cent) have had further episodes of hemorrhage, and 13 (32.5 per cent) still have pain referable to the ulcer. Only 45 per cent are asymptomatic. Thirteen of the 19 medically treated patients who are still having symptoms, and 7 of the 18 asymptomatic patients are still on a diet.

Table 5

Follow-Up (3-16 years) of 49 Patients with Peptic Ulcer Complicated by Severe Hemorrhage

	Treated Medically		*Treated Surgically*		*Total*	
	No.	*Percent.*	*No.*	*Percent.*	*No.*	*Percent.*
Asymptomatic	18	45	8	89	26	53
Still having pain	13	32.5	1	11	14	28.5
Has had recurrence of hemorrhage	6	15	0	0	6	12.3
Dead of disease (recurrent hem.)	3	7.5	0	0	3	6.2
Total	40	100	9	100	49	100

In contrast to this group, only 1 of the 9 surgically treated patients followed has a complaint associated with the ulcer, and this is only mild epigastric discomfort.

The total of the immediate and subsequent mortality rates referable to peptic ulcer is exactly the same in the medically and surgically treated groups (table 6).

Table 6

Mortality from Peptic Ulcer with Severe Hemorrhage

	Immediate	*Subsequent from Ulcer*	*Total*
Treated medically	1.5%	7.5%	9.0%
Treated surgically	9.0%	0	9.0%

Summary and Conclusions

Of 77 patients admitted to Duke Hospital with massive hemorrhage from a peptic ulcer during the period from 1930 to 1943, all were treated by a medical regimen. One of these died, 11 continued to bleed and were subjected to surgery, and the remaining 55 apparently responded satisfactorily to medical treatment. One of the 11 patients requiring emergency surgery died as a result of continued bleeding from an ulcer that could not be resected. Nine of the 10 patients who survived operation have been followed for three to sixteen years, and only 1 is having mild symptoms of an ulcer.

The success of the surgical treatment would seem to be dependent on the expeditious performance of the operation, preferably with resection of the ulcer, and on the administration of large quantities of blood before, during, and after operation.

Of the 40 patients treated medically who have been followed, 22.5 per cent have had subsequent hemorrhages, one third of these ending fatally. The fact that 51 per cent of the survivors are still having symptoms,

and that 54 per cent are still on a diet suggests the possible desirability of surgery in more of these patients after the acute condition has subsided. Undoubtedly the operative mortality would not be above that resulting from subsequent hemorrhages, and many more of the survivors would be free of symptoms.

From this study we can conclude that, during the phase of active hemorrhage, an initial period of medical treatment is indicated in all patients with bleeding peptic ulcer, regardless of age. If active bleeding continues under this regimen, surgical interference is indicated, and has been successful in 90 per cent of our cases. Because bleeding and ulcer symptoms recur in a large percentage of patients whose bleeding stops under a medical regimen, surgery is considered advisable in most cases after the acute condition subsides. With our present knowledge, vagotomy, if it is performed as an experimental project with the patient's consent, may be the operation of choice in patients recovering from their hemorrhage under a medical regimen of treatment.

Discussion

Dr. John Elliott: Dr. Hart has called attention to the importance of massive transfusions in the treatment of hemorrhage from peptic ulcers. In this day when donors are scarce and blood is so precious, we should review the indications for transfusion and give only that quantity and fraction of blood required to restore the normal physiology.

In patients with bleeding ulcers it is often necessary to give whole blood because there is a reduction in blood plasma as well as in red cells. When the red cell count is down to 1,000,000, however, from chronic hemorrhage, it is frequently impossible to give enough whole blood to restore the red cell count to normal in a single transfusion. The red cell count can be restored to normal, however, by transfusing the cells alone. In one case I recall the red cell count was 1,000,000 after a hemorrhage of several days, but the blood plasma was only slightly reduced; the patient's systolic blood pressure was 100. We gave the red cells from 4800 cc. of blood to the patient in a single transfusion, thus restoring the red cell count to normal within six hours. The plasma from the 4800 cc. of blood was still available for other cases in which it was desperately needed.

When transfusion is indicated, the decision should be made as to whether plasma, red cells, or whole blood should be given. When the indication is for red cells alone, the blood plasma being normal, only the red cells should be given; when the indication is for plasma, only the plasma should be given. In patients with gastric hemorrhages, when the blood volume and the red cells are both reduced, whole blood should be given until the volume is restored; the transfusion should then be continued with red cells.

NEUROPSYCHIATRIC ASPECTS OF MENTAL DEFICIENCY

A Clinicopathologic Study Based on Two Hundred Autopsies

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When in 1887 J. Langdon Down[1], to whom we owe the first distinct description of mongolism, was invited by the Medical Society of London to give a series of lectures on "Mental Affections of Childhood and Youth," he introduced himself with the following words:

"When you, sir, and your colleagues on the Council of the Medical Society of London, did me the honour to request me to deliver the Lettsomian Lectures on Medicine for this year, I bethought myself that mental deviations in childhood and youth had never been the subject of a disquisition from this chair."

I think that now, sixty years later, this is almost the first time that a neuropsychiatric society has invited a speaker to give the main address on mental deficiency, and I want to express my gratitude and appreciation to the president and members of this society who thought it worth while to have a special paper on this branch of neuropsychiatry. As a matter of fact, mental deficiency is a legitimate child of neuropsychiatry, although it is still treated rather as a stepchild. When Langdon Down called his lectures "Mental Affections of Childhood and Youth," he emphasized clearly the relationship between psychiatry and the study of what we now usually call mental deficiency.

The Importance of the Mental Affections of Childhood

It is unfortunate that neuropsychiatrists have until recently somewhat neglected the field of child study, and left it almost entirely to the psychologists. Many afflictions of adolescence and adult life make their first appearance many years earlier, and the manifestations of mental disease in children are frequently much clearer than those of the same type which appear in adults. Moreover, some conditions which are later con-

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1. Down, J. L.: On Some of the Mental Affections of Childhood and Youth, London, J. & A. Churchill, 1887.

sidered "degenerative" diseases are apparently the end results of acute disorders of infancy and childhood. I personally have come to consider the term "degenerative disease" a misnomer; I am convinced that most such diseases are either metabolic disorders or post-infectious conditions which have progressed to the stage of reparative sclerosis or degeneration. Wilson's disease, formerly believed to be a "degenerative" disease, has been found to be a metabolic disorder of the liver, and we may soon trace the etiology of liver cirrhosis to an original infectious hepatitis or erythroblastic anemia. Other so-called degenerative diseases such as the Hallervorden-Spatz syndrome, paralysis agitans, and so forth, also seem to have an infectious or metabolic basis. On the other hand, a better understanding of metabolic disorders will lead to a recognition of the fact that many mental conditions are not expressions of a genetic mental inadequacy, but manifestations of an abnormal metabolism of fats or proteins like that seen in amaurotic idiocy or phenylpyruvic oligophrenia.

In this way the study of mental affections of childhood and youth offers the most promising field for an enlargement of physiologic psychiatry. I do not want, however, to say that all of psychiatry should end in a study of physiology. On the contrary, I think that the neuroses appear even more clearly conditioned by psychologic factors.

Developmental Pathology

Since I am using the results of a pathologic study as the chief basis for classification of the various types of mental deficiency, I would like to add a few words about the special type of pathology which I have introduced at the Wrentham State School. The general pathologist is interested in the cause of death. His diagnosis of meningitis, tumor, tuberculosis, hepatitis, pneumonia, or coronary thrombosis explains the death, but does not necessarily contribute to an understanding of the manifestations of mental deficiency. If we want to know the cause of mental deficiency, we have to go back to those factors which were responsible for the abnormal development of the nervous system, and have to eliminate all those confusing conditions which have entered the picture later in life and which are likely to obscure the original factors. I have applied the name "developmental pathology" to this field of research, and have attempted in several articles to emphasize the difference between developmental and general pathology.

In contrast to the aims of general pathology and neuropathology, developmental pathology attempts to study the deviations from the norm which occurred during that important plastic period before development was completed. A main goal of developmental pathology is, therefore, the determination of the time at which deviations from the normal course took place. In general, we can divide developmental anomalies into those of the prenatal, the natal, and the postnatal periods. Anomalies developing during the prenatal period are usually referred to as "developmental," while the natal anomalies are usually traumatic, and the postnatal are traumatic, infectious, or metabolic. The determination of the time of onset of pathologic lesions is of great eugenic and medical interest, but it should be stated that the developmental disorders of the prenatal period are by no means generally or necessarily of a hereditary nature.

Pathologic Study of 200 Cases of Mental Deficiency

The customary pathologic diagnoses made at autopsy on 200 patients with mental deficiency are listed in table 1. Since the study

Table 1

Pathologic Diagnoses

Diagnosis	*No. Cases*
Mongoloid deficiency	50
Microcephaly	19
Hydrocephaly	13
Vascular accidents (traumatic)	30
Post-infectious conditions	17
Congenital syphilis	5
Familial moronism and high-grade imbecility	20
Familial idiocy and low-grade imbecility	15
Phenylpyruvic oligophrenia	2
Endocrine disorders (cretinism, goiter, polyglandular disturbances)	4
Dystrophia myotonica	3
Dwarfism	3
Neoplastic malformations (tuberous sclerosis, neurofibromatosis)	4
Metabolic disorders (Wilson, Hallervorden)	2
Kernicterus (Rh-factor)	2
Questionable cases	11
Total	200

was based on cases seen at autopsy, the different types of mental deficiency are not represented in their true proportions. The familial or endogenous type is much more frequent than idiocy or mongolism, but since the former group of patients live much

longer than patients with exogenous mental deficiency, they are far less well represented. For several reasons, which need not be discussed here[2], mongolism was the condition most frequently encountered in this study; 50 cases were seen at autopsy. There were 20 morons and high-grade imbeciles with an I.Q. of 45 or above (who really should be classified as morons), and 15 undifferentiated idiots and low-grade imbeciles. Most other types of mental deficiency were plentifully represented.

It is quite obvious that such a table of pathologic diagnoses does not give essential data in many cases as to the etiologic factors. There are, for instance, several causes for microcephaly. Some cases are of developmental prenatal etiology, some of traumatic origin. Hydrocephaly, likewise, may be caused by malformations, infectious diseases or tumors. The undifferentiated types of idiocy and imbecility ought finally to be classified according to the pathologic diagnosis, and eventually an entirely different system of classification will evolve. This system will be readily demonstrated by discussing some of the major groups.

2. Benda, C. E.: Mongolism and Cretinism, New York, Grune & Stratton, 1946.

Microcephaly

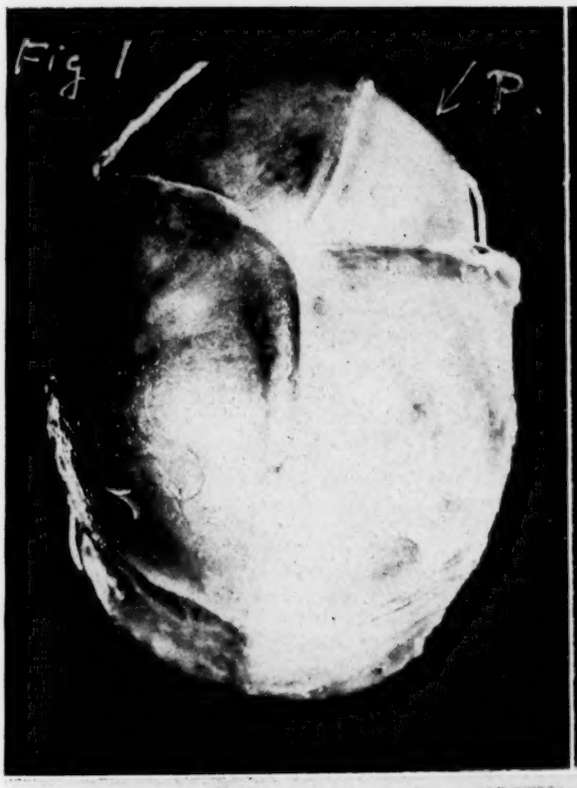
The diagnosis of microcephaly was made in 19 cases, which are listed in table 2. As may be seen, the circumference of the head was less than 19 inches in all cases except case 6, in which the circumference was 21 inches. In this patient the final circumference was apparently increased as a result of hydrocephalus, but the original condition was microcephaly. In another case (case 7) an increase from 16¾ inches to 18.1 inches was observed in the last period before death, and was also due to an increase in spinal fluid.

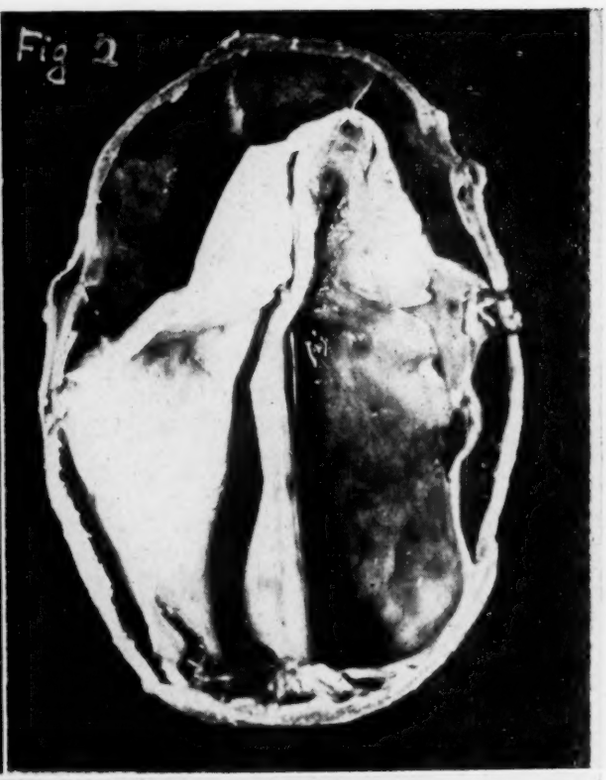
The diagnosis of microcephaly was made when the circumference of the head was less than 19 inches in persons above 10 years of age, and about 2 inches below average in infants and children below 10. Micrencephaly was conspicuous in all patients except cases 7 and 10, whose brains weighed slightly more than 1000 Gm. In all the other cases, the brain was strikingly undersized, ranging from 132 Gm. in a child of 4½ years up to 987 Gm. in a child of 15 years. The patient whose brain weighed 1078 Gm. at autopsy was found to have hydrencephaly, and the weight included a considerable amount of spinal fluid within the ventricular

Table 2
MICROCEPHALY

No.	*Case No.*	*Sex*	*Age*	*Body Length*	*Head Circumference*	*Brain Weight*	*Pathologic Diagnosis*
1	46/189	M	32	4′7″	17½″	720 Gm.	Cystic degeneration. Subcortical encephalomalacia.
2	46/183	M	7 9/12	3′2½″	14¾″	360 Gm.	Prenatal; developmental.
3	45/170	M	10 2/12	3′5″	15″	420 Gm.	Prenatal; developmental.
4	44/149	M	7 6/12		16⅜″	508 Gm.	Cystic degeneration. Microgyria.
5	43/109	F	7 11/12	4′1″	18″	690 Gm.	Hemiatrophy. Cystic degeneration.
6	43/106	M	22	5′4″	21″	700 Gm.	Hemiatrophy. Cystic degeneration.
7	42/79	F	5 6/12		18 1/10″	1078 Gm.	Cerebellar cleft.
8	41/76	M	4 1/12	2′6″	17¼″	132 Gm.	Cystic degeneration.
9	41/75	M	17 11/12	5′4″	17¾″	788 Gm.	Cystic degeneration.
10	39/40	F	5 6/12	3′3″	17¾″	1009 Gm.	Small brain. Vascular sclerosis.
11	39/45	M	10 6/12	3′6½″	18½″		Developmental; microgyria.
12	37/3	F	3 5/12	3′	18″	565 Gm.	Cystic degeneration.
13	38/18	F	2 3/12	2′2″	14½″	250 Gm.	Cystic degeneration.
14	44/132	F	20		18″	610 Gm.	Cerebral dwarfism. Chronic infection.
15	42/97	M	1	2′1″	12″	138 Gm.	Hemorrhage.
16	42/98	F	13	3′1″	17¾″	498 Gm.	Cystic degeneration.
17	41/74	F	15 4/12	4′3″	19″	987 Gm.	Developmental.
18	41/67	M	Newborn	16″	anencephalic		Absent or destroyed brain tissue.
19	Mansfield Depot*	M	17	3′11″	16″	635 Gm.	Congenital neoplastic malformation: cleft in posterior skull.

* Courtesy of Dr. Neil Dayton, Superintendent





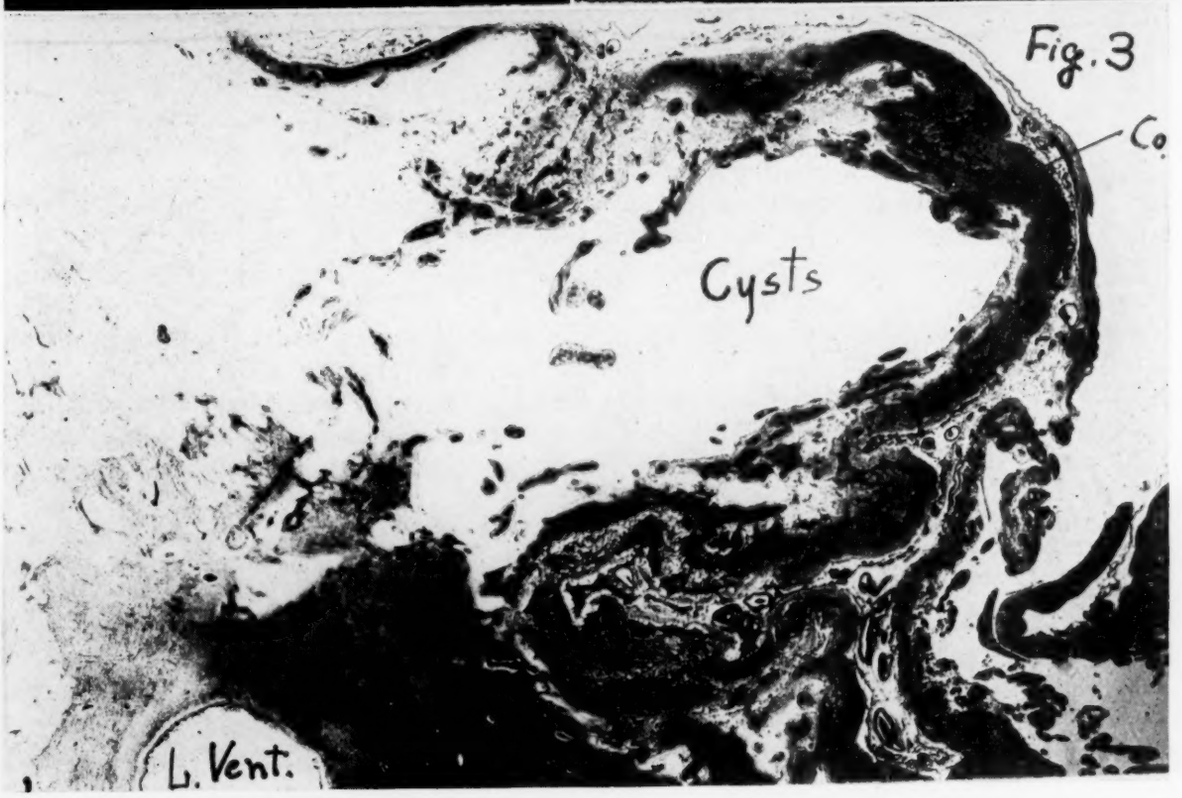


Fig. 1. Superior view of the calvarium of a microcephalic infant 4 months of age. Note the depressed right frontal bone and overlapping of the left parietal bone over the right parietal bone and the left and right frontal bones. The anterior fontanel is completely obliterated.

Fig. 2. Inferior surface of the calvarium and dura. Note the large epidural and subdural hemotamas. The left dura shows evidence of organization with duplication of the dura sheath.

Fig. 3. Coronal section through the brain (myelin stain). Note the subcortical encephalomalacia with cystic degeneration of the white matter; also the glia and fibrous organization of the gray matter of the cortex. L.V.—Lateral ventricle; Co.—Cortex.

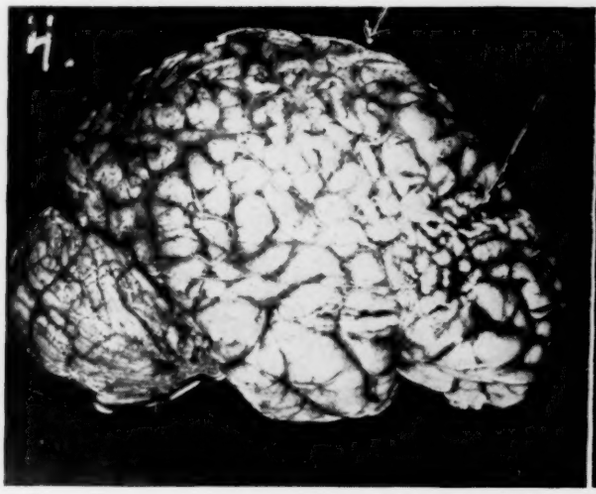


Fig. 4. Lateral view of the brain of a microcephalic patient (Case 1, Table 2). Note the sclero-gyria of several frontal and precentral convolutions.

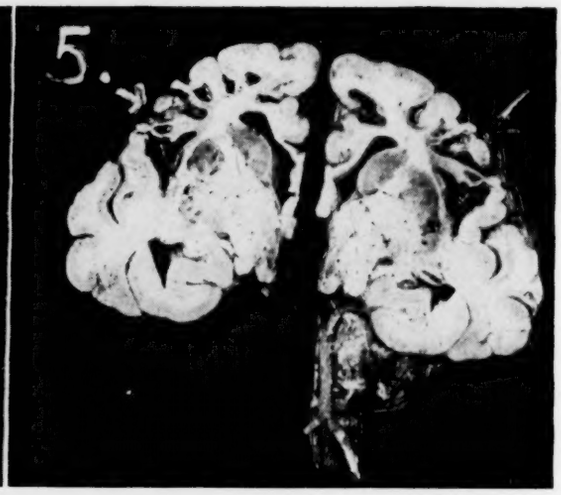


Fig. 5. Coronal section through the brain seen in fig. 4. Note the bilateral subcortical encephalomalacia in a distribution following the branches of the medial cerebral artery.

system. There was also an accumulation of spinal fluid and a great amount of vascular sclerosis in the brain which weighed 1009 Gm.; when it was weighed a second time the weight was only 956 Gm.

Two conditions are conspicuous as causes of microcephaly: prenatal developmental anomalies and cystic degeneration of the brain. Nine patients, or almost 50 per cent of the cases of microcephaly studied at autopsy, showed cystic degeneration of the brain. Cystic degeneration causes the white matter to become vacuolated and gradually replaced by cavities which are filled with fluid. The gray matter is more resistant in the beginning, but eventually yields to the progressive degeneration; the cortical mantle is finally completely destroyed, with some residues floating in the spinal fluid. The cases listed in table 2 showed all stages of cystic degeneration, from the formation of a few small cavities to an almost complete destruction of the brain (case 8). I have dealt with the subject of cystic degeneration in a previous paper, and I shall return to it in discussing the traumatic group.

The other cases of microcephaly are those in which the brain development failed to complete the normal patterns[3]. Case 3, that of a 10-year-old microcephalic child, is an example of this type of malformation, in which the central nervous system resembles strikingly that of a lower animal. In 1 patient, an anencephalic monster who died at birth, the brain was completely destroyed and only a bloody mass was left. Another patient had a striking cleft formation in the cerebellar region, in addition to early developmental arrest.

Another case which deserves special interest was that of a 1-year-old child from a healthy family. The father, an outstanding man in public life, was extremely depressed about the child's condition, thinking, as most people do, that congenital microcephaly is a result of genetic factors. He was greatly relieved when he learned from the autopsy that the child had had a large hemispheric hemorrhage apparently in the last months before delivery, possibly due to placental hemorrhage or high blood pressure in the mother. This case was clearly the result of an accident, and no hereditary factors were involved.

Two patients showed small brains about half the size of a normal brain. Whether these cases represent true cerebral dwarfism or are due to unknown factors I am not yet able to decide. Histologic study of the brains showed the great increase in vascularity and the sclerosis which is so frequently found in postencephalitic conditions. These cases may have been due to fetal encephalitis, but the evidence is not yet conclusive.

The term "microcephaly" is descriptive to some extent, but it does not cover a morbid entity. While there are a few instances of familial microcephaly, it is obvious that microcephaly of the prenatal developmental type by no means indicates in every case a hereditary genetic inferiority. Cases due to

3. (a) Benda, C. E.: Microcephaly, Am. J. Psychiat. 97:1135-1146 (March) 1941.
(b) Yakovlev, P. I., and Wadsworth, R. C.: Schizencephalies, J. Neuropath. & Exper. Neurol. 5:169-206 (July) 1946.

x-ray radiation have been collected by Murphy and others. As a rule the factors producing microcephaly are of a vascular, infectious, or unknown extrinsic nature. Clinical differentiation of the various types may be difficult, but seems to be possible in the majority of cases.

Malformations of the central nervous system are frequently associated with other anomalies. One of our patients with a cerebellar cleft had a cleft palate and a latent spina bifida, and two patients with the most conspicuous cases of microcephaly showed abnormalities of the sex organs (pseudohermaphroditism), webbed toes or fingers, and other stigmata of early developmental pathology.

Hydrocephaly

Cases of hydrocephaly may also be divided into those with congenital malformations and those which develop after birth as a result of various factors, mainly inflammatory processes, gliosis and tumors. The 11 cases of hydrocephaly in this series are listed in table 3. Seven of these cases represent congenital malformations, among which cerebellar clefts and meningomyelocele play a paramount role.

The recent surgical literature may give one the impression that a large percentage of cases of hydrocephaly can be ameliorated by surgical procedures, mainly cauterization of the choroid plexus. It has also been pointed out that the skillful removal of a meningocele may prevent the development of hydrocephaly. In many cases, however, profound malformations involving the whole length of the spinal cord and the brain axis are present. In some of our cases the spinal cords showed duplication and syringomyelic changes on several levels, while the cerebellum showed cleft formations or absence of the vermis.

Some of our cases are identical with those described by Arnold and Chiari, and are classified as the "Arnold-Chiari malformation." Some of these malformations are of a genetic nature; in one family the only two children suffered from an Arnold-Chiari deformity. Spina bifida or related malformations are frequently found in other members of such a family.

Among the 4 patients with hydrocephaly which was not congenital in origin was one with neurofibromatosis which developed early in infancy and led to occlusion of the aqueduct. In another case a neuroepithelioma occluded the third ventricle, and in the 2 remaining cases a gliosis of possible inflammatory nature led to ependymitis and gliosis of the aqueduct, with almost complete occlusion.

The choriod plexus was studied in all these cases of hydrocephalus, and in no case was hypertrophy found; on the contrary, degeneration of the choroid plexus was striking in most instances. Marked ependymitis was noted in every case, however, and changes in the ependymal lining of the ventricles and aqueduct were persistent findings. It is my conviction that the mechanism of internal hydrocephaly is related to the ependymal lining of the ventricles and depends upon

Table 3
HYDROCEPHALUS

No.	*Case No.*	*Sex*	*Age*	*Head Circumference*	*Pathologic Diagnosis*
1	37/12	F	7 mos.	24 in.	Cerebellar cleft.
2	41/73	M	3 5/12	35 1/10 in.	Myelomeningocele. Cerebellar porencephaly.
3	42/77	F	1 2/12	27 in.	Cleft in clivus. Myelomeningocele. Arnold-Chiari malformation.
4	42/80	F	3 8/12 9 mos.	26¼ in.	Cerebellar anomalies. Cystic spinal cord.
5	42/95	F	24 days	27¾ in.	Agenesis. Porencephaly.
6	43/114	F	5 10/12	18¼ in.	Cerebellar cleft.
7	42/84	F	1 8/12	17½ in.	Cerebellar agenesis. Rachischisis (genetic).
8	42/86	F	29	Not enlarged	Neuroepithelioma, third ventricle.
9	41/64	F	14 7/12	22½ in.	Agenesis of mantle. Gliosis of aqueduct with obstruction.
10	40/46	F	14 7/12	22½ in.	Neurofibromatosis.
11	45/172	F	1 6/12	29¼ in.	Ependymitis, post-infectious.

interference with the exchange between the spinal fluid and the brain tissue which has been postulated by many writers. Dr. Yakovlev[4] seems to have recently come to the conclusion that hydrocephaly is not primarily due to an increase in the pressure of spinal fluid, but to an abnormal structure of the brain wall which makes it unable to exercise sufficient resistance against even a normal spinal fluid pressure. The pressure therefore continues to increase because of failure of the ventricle wall to establish the proper equilibrium.

Vascular accidents and birth injuries

Among the 200 autopsies, 38 cases were found in which the anomalies were due to vascular lesions. If we exclude the 50 cases of mongolism, the incidence of vascular pathology among the remaining 150 cases is 25.3 per cent; if we exclude the 35 cases of endogenous mental deficiency, however, the incidence of vascular pathology among the remaining cases is 33 per cent. One must remember that most of these patients were classified as idiots and low-grade imbeciles, and that only one was in the moron group. The significance of traumatic lesions in the etiology of the severe types of mental deficiency is, therefore, beyond argument.

In a previous paper[5] I pointed out that the vascular lesions fall into three main groups: (1) mantle sclerosis or subcortical encephalomalacia, (2) cystic degeneration in which the white matter is principally involved, and (3) diffuse patchy devastation with widespread lesions and diffuse involvement of the gray matter of the cortex and basal ganglia. Among the microcephalic patients 8 were found to have subcortical encephalomalacia or cystic degeneration. These cases provide evidence that trauma, with or without asphyxiation, is a main cause of cystic degeneration. Another case which has come to autopsy since this series was completed shows more clearly than most cases which have been presented before the relationship between skull compression, epidural and subdural hematoma, and the cystic degeneration of the brain which we have found in 6 other cases.

The infant (case 44/153) was one of twins, the twin sister being in good condition. Both parents were healthy and normal. Delivery was accomplished by low forceps after eighteen hours of labor. The baby weighed 4 14/16 pounds at birth, and was 18 inches long. On the third day after delivery twitching of the right upper and right lower extremities was observed; the baby was in a semicomatose condition. The twitching continued for several days, and the infant was unable to take feedings except when they were given by an eye dropper. On the tenth day after birth the head began to enlarge. On the fifteenth day twitching ceased, but spasticity of arms and legs was noted. Almost a month after birth there was a sudden rise of temperature up to 104, and the size of the head began to decrease. In the hospital the diagnosis of cerebral agenesis was made. The child appeared blind to light; the pupils did not react, and nystagmus was present on lateral deviation.

The child was admitted to our school on November 9, 1944, at the age of 3 months and 3 weeks. Physical examination showed a child measuring 21½ inches in length and weighing 5½ pounds. The most outstanding feature was depression of the right frontal bone and overlapping of the left skull bones over the right side; no fontanel was present. The legs were spastic and showed a tendency to crossing. There was paralysis of the left external eye muscle, with strabismus and nystagmus toward the left; the pupils were unequal.

The child died three weeks later, and an autopsy was made. When the scalp was reflected from the calvarium, the distortion of the skull bones was easily recognizable. The right frontal bone was pushed inward beneath the parietal bone, which was overlapping. The skull seemed compressed in the right diameter. When the calvarium was removed, a huge epidural and subdural hemorrhage was found on the left side, and an epidural hemorrhage on the right side. That this hemorrhage was about three months old could be shown by the organization of the dura, with duplication of the sheets. A large blood clot covered the convexity of the brain, which itself showed a severe degree of cystic degeneration.

The largest number of birth injuries result in the third type of pathology—diffuse patchy degeneration. Twenty-five cases of this type were observed, including 14 cases of spastic paralysis or Little's disease. Little's disease is frequently associated with a "status marmoratus" of the basal ganglia, which has also been described under the name of "Vogt's disease." In 7 cases such status marmoratus was found. The findings in these cases seem to indicate that the status marmoratus and, therefore, Little's disease is the result of a birth trauma and is not a congenital malformation. It is beyond the scope of this paper to argue the point in detail, but I may say that status marmoratus was associated with other pathology indicative of traumatism in so many instances that the relationship cannot be denied. Spatz has compared the status marmoratus with a "central amputation neurinoma," and my observations seem to support such an interpretation.

Post-infectious conditions

It has been suspected for a long time that encephalitis plays an important part in the

4. Yakovlev, P. I.: Personal communication.
5. Benda, C. E.: The Late Effects of Cerebral Birth Injuries, Medicine 24:71-110 (Feb.) 1945.

production of mental deficiency. Evidence for such a relationship is found not only in hospital case histories, but in observations of children who have had encephalitis and afterwards show changes in their character, behavior, and mentality. While Parkinsonism almost never develops before puberty, restless, overactive behavior in childhood may precede the development after puberty of a state of post-encephalitic Parkinsonism. One example may be cited:

A boy (case 39/35) who was born in Sweden in 1920 cried continuously when he was 7 months old, but doctors in Sweden told the mother that this was not serious. During this time the child was unusually restless and had convulsions and high temperatures. We may note that this illness occurred in 1921, when the incidence of encephalitis lethargica was highest in Europe.

The child developed slowly, but was noisy and exceedingly active. He proved to be vicious toward other children, and sometimes deliberately pushed them down. He was difficult to control, and it was impossible to get his attention for any length of time. Another note states that he kept running around in circles and scratching himself. He seemed to know more than he was able to express. Still another note states that his behavior suggested psychosis.

In 1937, when the boy was 17 years of age, a peculiar posture suggestive of post-encephalitic Parkinsonism developed, together with a marked coarse tremor and rigidity, especially of the right arm. He could not bend the right arm to touch his face. He died in 1939, and the study of the brain revealed a typical picture of post-encephalitic Parkinsonism. This has been described in detail in a publication with Dr. Stanley Cobb "On the Pathogenesis of Paralysis Agitans."[6]

It is not possible to determine how many cases of post-encephalitic behavior problems and mental deficiency are to be attributed to this specific type of encephalitis, which fortunately has become rarer in the recent decade.

Rheumatic encephalitis

New observations seem to throw light on another type of encephalitis, which is still little known. Two cases which I saw at autopsy in 1941 showed signs of encephalitis in the brain, but the picture was so different from anything I had seen before that I was not able to classify these cases properly. In the cortex there were found diffuse areas of devastation (*"Veroedungsherde"*) which sometimes showed capillary proliferation and gliosis. The leptomeninges were thickened, and many vessels showed a particular type of endarteritis. The possibility of congenital syphilis was considered, but the picture was too different in many details

6. Benda, C. E., and Cobb, S.: On the Pathogenesis of Paralysis Agitans (Parkinson's Disease), Medicine 21:95-142 (May) 1942.

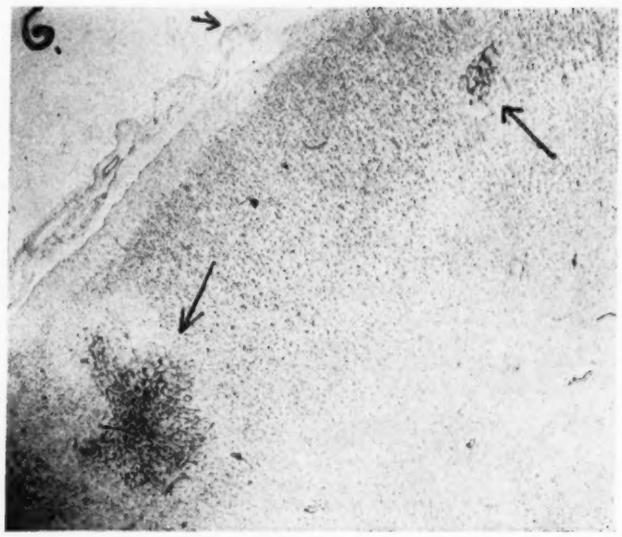


Fig. 6. Cortex scars in a case of chronic rheumatic encephalitis. Note the areas of devastation, with loss of all nerve cells. In the center of the areas capillary proliferation with fibrinous exudate is present.

for these new cases to be classified as syphilitic. It was not until 1946, when I saw the exhibition of Dr. Walter L. Bruetsch at the convention of the American Psychiatric Association in Chicago, that I realized the true character of the pathologic lesions. Dr. Bruetsch has emphasized for many years the importance of chronic rheumatic brain disease as a possible factor in the causation of certain cases of mental disease[7]. His pictures of the brain lesions were identical with those which I had seen in my cases. When I returned to a study of the heart and vascular system in these 2 cases, I found that in both cases rheumatic endocarditis had been diagnosed independently.

The pathologic picture of chronic rheumatic brain disease consists of endarteritis of the smaller vessels, which are sometimes completely occluded by granulations. The endarteritis involves also the capillaries leading into the gray matter of the cortex. What is most impressive are the areas of devastation which are scattered through the gray matter. In those areas the nerve cells are completely destroyed, and the gray matter is either empty or filled with vascular scars of varying size. These scattered scars are likely to produce incoherent behavior and mentation, and a patient with such brain scars may be diagnosed as psychotic, men-

7. (a) Bruetsch, W. L.: Chronic Rheumatic Brain Disease as a Possible Factor in the Causation of Some Cases of Dementia Praecox, Am. J. Psychiat. 97:276-296 (Sept.) 1940.
(b) Bruetsch, W. L.: Late Cerebral Sequelae of Rheumatic Fever, Arch. Int. Med. 73:472-476 (June) 1944.

Fig. 7. Meningeal vessels with rheumatic endarteritis. Note the occlusion of several vessels and the fibrous proliferation of the perivascular tissue.

Fig. 8. Higher power magnification of one of the meningeal arteries. Note the fibrous occlusion of the vessel by subendothelial fiber tissue proliferating into the vessel lumen. Some endothelial cell-nests from intima cells are present within the proliferated fiber tissue.

tally deficient, or a behavior problem.

The importance of chronic rheumatic infection as a cause of chronic encephalitis may eventually surpass that of congenital syphilis. The significance of these observations is further emphasized by a third case.

A girl (case 41/62) who was born in 1921 is said to have started to talk at 8 months and to walk at 14 months. She had a "brain fever" at the age of 19 months, and following this episode she was unable to walk and was badly deformed. She did not talk for three years after this illness. During her illness she had convulsions which continued to appear intermittently for the next ten years. The child had a rather pleasant and happy disposition, but was very restless. It was noted that her arms were in constant motion, and were moved in a jerky way. The legs were spastic, and her spine was completely bent so that her head faced her legs.

A neurologic examination which I made in 1937 showed a dystonia of the trunk and extremities. There was a striking disorder of posture. The spine of the child was bent to the left in a bow-like circle, and she was not able to stretch her back or to sit in an upright position. The head was bent to the left shoulder and could be turned only with great difficulty. Both arms could be used for some coarse motions, but there was a striking lack of coordination. The left leg could be bent at the knee and stretched out, but this movement had to be performed against marked spasticity. Her motions were atactic and uncontrolled. The right leg was stretched and could not be bent even with force. The Babinski was positive on both sides and knee jerks were very active. The girl was fairly bright and she moved with some skill upon the floor. She understood very well, but her speech was defective. She was good-hearted, but irritable and fearful. The neurologic examination revealed some peculiar findings which did not fit into the diagnosis of "infantile spastic paralysis." The bending of the trunk was like a torsion spasm, torticollis, and dystonia.

The girl lived to be 19. The brain, which weighed 1245 Gm. and was well developed, showed signs of encephalitis which was still in an active stage at the time of death. The cortex showed the same pathologic picture seen in the 2 other cases previously mentioned—areas of devastation and a very active endarteritis with some nodule formation and glia scars. There was in addition, however, severe involvement of the basal ganglia and cerebellum; the substantia nigra was spared. Examination of the heart showed a slight increase of the pericardial fluid. The mitral valve contained a rigid opening which admitted only one finger. The edge of the cusps formed a thickened ring and the lower surface of the cusps was covered with vegetations which were adhesive and could not be removed. One of the cusps was adherent to the wall of the ventricles. The papillary muscles and tendinous strings were replaced by reddish-white masses of fibrinoid tissue which attached the muscle to the wall. The opening of the tricuspid valve admitted only one finger. The diagnosis was "old rheumatic endocarditis with adhesions, vegetations, and mitral stenosis."

Cases of torsion spasm or dystonia musculorum are not rare and have been observed to develop in teen-aged children. They have puzzled neurologists for a long time because the picture is so inconsistent. Some writers were inclined to consider this condition a manifestation of hysteria. The evidence that the case described above was due to chronic rheumatic encephalitis throws new light upon the problem of torsion dystonia. If it should be proved that this condition is sometimes due to chronic rheumatic encephalitis, I am sure that a therapeutic approach will finally be developed.

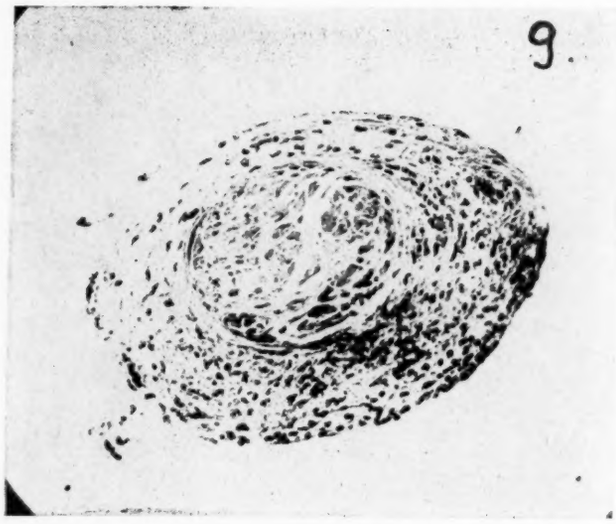


Fig. 9. Vessels of the heart in a patient with rheumatic endarteritis (case 3). Note that the patterns of vascular pathology are essentially the same as those seen in the meningeal vessels.

Familial oligoencephaly

Limitations of time make it impossible for me to discuss each of the other pathologic entities represented in this series of 200 autopsies. The category which many may consider the most important one is that of familial mental deficiency, including morons and high-grade imbeciles. The greatest proportion of cases of mental deficiency fall into the category which may be called "endogenous" or "primary," "intrinsic" or "familial." While one school of thought emphasizes the hereditary character of this condition, there are other publications which stress the environmental conditioning of feeble-mindedness. The autopsy findings in the 35 cases of our series which came under this classification justify the statement that the endogenous group is, from a neuropathologic point of view, a morbid entity which may be called "oligoencephaly."[8]

The study of the spinal cord in these patients proved to be of great advantage, because the spinal cord shows normally rather standardized and symmetrical patterns which are readily studied and compared with other material. In the endogenous cases of mental deficiency an overwhelming number showed abnormalities in the development of the spinal cord and of the brain which indicate that the abnormal development takes place during the early months of prenatal life. These anomalies of the spine, which can be classified pathologically as "spinal dysraphia" or "myelodysplasia," consist in asymmetry of the two halves of the gray matter, anomalies in the differentiation of the central canal, and anomalies in the structure of the white matter. These anomalies of development are usually not associated with striking neurologic abnormalities, but we must remember that our routine neurologic examinations can disclose only the more striking anomalies. More careful functional examination, such as that made by Drs. Yakovlev and Farrell[9], has revealed anomalies in the Babinski reflex which would otherwise have escaped attention.

Anomalies in differentiation similar to those seen in the spinal cord can be discovered in the brain and cerebellum. The Purkinje cells, for instance, which are in the normal brain lined up like soldiers, are strikingly abnormal in cases of oligoencephaly. The cerebral hemispheres are abnormally asymmetrical, and the nerve cells show many anomalies in structure and distribution. They seem to indicate that the endogenous type of mental deficiency is a developmental disorder of differentiation starting early in prenatal life and is, therefore, removed from any effective therapeutic influence after birth. Because of the many unusual physical characteristics of the oligoencephalic patient, such as asymmetry of the two sides of the body, high arched palate, cleft formations, vascular autonomic deficiencies, and anomalies of hands and feet, this condition can usually be diagnosed during life.

Conclusion

A survey of 200 autopsies performed on mental defectives indicates that a great variety of pathologic influences operating before birth, at birth, and after birth, are the reasons for mental deficiency. Mental deficiency, with its great social and economic implications, deserves an equal place beside mental illness and neurologic conditions in the field of neuropsychiatry. From a merely custodial and educational problem, mental deficiency has to evolve as a medical problem for which we need adequate hospital facilities and diagnostic laboratories which will enable us to handle these cases according to their needs.

8. Benda, C. E.: The Familial Imbecile or Oligo-Encephaly as a Morbid Entity, Am. J. Ment. Deficiency 49:32-42 (July) 1944.

9. Yakovlev, P. I., and Farrell, M. J.: Influence of Locomotion on the Plantar Reflex in Normal and in Physically and Mentally Inferior Persons, Arch. Neurol. & Psychiat. 46:322-330 (Aug.) 1941.

An analysis of the material shows that increased knowledge of prenatal pathology, more courageous surgery in cases of birth injuries, and improved methods of treating the infectious and metabolic disorders of childhood will greatly change the aspect of mental deficiency. This problem offers a wide field of investigation for pediatricians, surgeons, and neuropsychiatrists; each of these specialists will find a number of cases which could be prevented or ameliorated by early and proper attention.

REPORT OF A PATIENT TOLERATING CRYSTALLINE PENICILLIN WITHOUT REACTION AFTER REPEATED CUTANEOUS REACTIONS TO CRUDE PENICILLIN

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It is debatable whether or not penicillin *per se* produces untoward reactions in man. In a previous study at this clinic[1] it was impossible to demonstrate an antigen-antibody reaction to penicillin or contaminants of penicillin in five persons who developed urticaria associated with therapy with unpurified penicillin.

Until recently, we felt that there were few reactions encountered with penicillin therapy which justified termination of treatment when the antibiotic was definitely indicated. Recently, however, a case of exfoliative dermatitis apparently due to non-crystalline penicillin has been observed. We have come to believe that any patient who develops a diffuse erythema with edema of the skin associated with penicillin therapy is a potential candidate for exfoliative dermatitis. Farrington and Tamura[2] have observed a patient with exfoliative dermatitis attributed to therapy with crude penicillin.

From the Division of Dermatology and Syphilology of the Department of Medicine, Duke University School of Medicine, Durham, North Carolina.

1. Callaway, J. L., and Barefoot, S. W.: Immunological Studies on Patients Developing Urticaria Associated with Penicillin Therapy, J. Invest. Dermat. 7:285 (Dec.) 1946.
2. Farrington, J. and Tamura, J.: Cutaneous Testing in a Case of Exfoliative Dermatitis Caused by Penicillin, Arch. Dermat. & Syphil., in press.

Report of Case

History

K.E.C., a 35-year-old white male taxi driver, was admitted to the hospital because of shortness of breath of two to three years' duration, which had become worse during the previous six months. The family history was negative except that all his relatives were said to have "prominent eyes." The patient had been married for eight years and his wife had never been pregnant.

The past history revealed that the patient had never experienced objective symptoms of active rheumatic fever, but had known for many years that he had a "leaking heart," which had never caused symptoms. He served with the marines from 1931 to 1935, but was subsequently rejected by the army in 1942 for reasons unknown to the patient. In 1934 he had primary syphilis, for which he received about twelve intravenous injections (arsenicals) and twelve intramuscular injections (bismuth). He stated that after receiving this amount of treatment he was told that his blood serologic tests for syphilis were negative. His wife was known to have had negative blood tests.

Insofar as the patient was concerned, his real illness began about eight years prior to this hospitalization. At that time he began to have classic episodes of paroxysmal auricular tachycardia, relieved by orbital pressure and by pressure over the region of the carotid sinuses. The frequency of the above episodes had increased until he had symptoms almost daily; he was able to terminate the attacks within a few minutes by orbital pressure, however.

For two to three years prior to admission, he had experienced mild exertional dyspnea, but had continued to work until fifteen months before he was admitted to Duke Hospital. At that time he was studied in another clinic, where hyperthyroidism was suspected. The basal metabolic rate was found to be +21 and +24 on two successive determinations. He was started on digitalis and thiouracil, and was placed on a low-salt diet. After three weeks the basal metabolic rate was found to be +15, and the thiouracil was discontinued. Since that time the patient had been confined to bed most of the time because of exertional dyspnea and orthopnea; he had continued on a maintenance dose of digitalis.

Physical examination

The patient was moderately well developed and was orthopneic. The skin was rather pallid, and the mucous membranes were pale. Definite bilateral exophthalmus was present, but no lid lag or weakness on convergence was noted. The thyroid gland was not palpable. The apical impulse of the heart was in the left mid-axillary line, and a soft, nontransmitted diastolic murmur was heard over the aortic area. The blood pressure was 172 systolic, 120 diastolic. Moist rales were heard over the left lower lung field, most of which disappeared after coughing. The liver was not actually felt, but tenderness and a sense of resistance were present beneath the right costal margin. The prostate was normal to palpation by rectum, and there was no peripheral edema or venous engorgement. No other abnormal physical findings were noted.

It was the impression of the examiner that the patient had hypertensive cardiovascular disease with moderate cardiac failure and functional aortic regurgitation.

Accessory clinical findings

The hemoglobin was 79 per cent (Sahli); there were 4,210,000 red blood cells and 7000 white blood

cells; the differential count was normal. Blood serologic tests for syphilis were negative. The urine was yellow and clear, with a specific gravity of 1.009, a heavy trace of albumin, and no sugar; microscopic examination of the centrifuged sediment showed an occasional red blood cell, 1-2 coarse granular casts, and 1-3 white blood cells per high power field, with clumping. Stool examination was negative for ova and parasites. The blood nonprotein nitrogen was 55 mg. per 100 cc.; urea nitrogen 37.2 mg. per 100 cc.; urea ratio 67.6; total proteins 6.9 Gm. per 100 cc., with albumin constituting 4.5 Gm. and globulin 2.4 Gm. The albumin-globulin ratio was 1.8. Blood cholesterol was 170 mg. per 100 cc.

The basal metabolic rate was +25 on the third hospital day, +4 on the seventh hospital day, and +3 on the twentieth hospital day. The temperature was normal at the time of each basal metabolic reading.

X-ray and fluoroscopic examination of the chest showed the lungs to be clear. The heart was enlarged, especially to the left, and the aorta showed moderate tortuosity. Retrograde pyelograms suggested polycystic kidneys or chronic bilateral pyelonephritis; the urologic consultant was unable to make the differential diagnosis, but found that he had a urethral stricture.

Two phenolsulfonphthalein renal excretion tests were done. The first showed a total excretion of 28 per cent in two hours, and the second an excretion of 26 per cent. A Mosenthal test showed a maximum concentration of 1.013.

Course in hospital

The patient was digitalized and given a low-salt diet with fluid restriction. He showed satisfactory progress insofar as his cardiac status was concerned. On the second hospital day he developed a furuncle in the region of the left knee, and one week later he was started on 20,000 units of non-crystalline penicillin every three hours. About six hours after the first injection of penicillin, urticaria developed, followed in twenty-four hours by a generalized erythema which had almost completely disappeared twenty-four hours later. Because of the cutaneous reaction he received only three doses of penicillin.

After ten days without penicillin, a severe generalized furunculosis had developed. The azotemia continued to increase, and on the fifth hospital day the blood nonprotein nitrogen was 126 mg. per 100 cc. A culture from one of the furuncles revealed hemolytic and non-hemolytic Staphylococcus aureus. The white cell count was never above 15,000 and the temperature was never above 38.5 C. (101.3 F), although the patient was obviously quite ill. It was feared that he might develop a staphylococcus septicemia. The advisability of sulfonamide therapy was considered, but these drugs were not given because of renal damage. The use of staphylococcus antitoxin was also considered inadvisable because of the fact that there was no shift to the left in the Schilling hemogram. Finally, on the twentieth hospital day, non-crystalline sodium penicillin was resumed in a dosage of 20,000 units every three hours; it was discontinued after five doses, however, because the patient again developed generalized erythema and edema of the skin, associated with severe pruritius. At that time he also experienced an acute exacerbation of a chronic tinea cruris, and of a chronic dermatophytosis between the toes.

At this time the patient appeared to be **in extremis.** We were unwilling to submit him to further therapy with non-crystalline penicillin for fear that he would develop an exfoliative dermatitis which might prove fatal if superimposed on his serious systemic disease. At that time he was given intradermal skin tests to non-crystalline penicillin and to crystalline penicillin G in dilutions of 1000 units per cubic centimeter of saline. The crystalline penicillin G gave no reaction whatsoever, while the unpurified penicillin produced a 2-cm. area of erythema and induration thirty minutes after the intracutaneous injection. At twenty-four and forty-eight hours this reaction was not evident.

On the thirtieth hospital day, the patient was started on 20,000 units of crystalline penicillin G every three hours, and experienced no reaction whatsoever. The dose was subsequently increased to 150,000 units every three hours, without any untoward reaction. On this therapy the multiple furuncles and carbuncles began to localize, and were eventually incised and drained. The patient made satisfactory progress, his temperature and white cell count returning to normal. On the sixty-fourth hospital day his blood nonprotein nitrogen was 52 mg. per 100 cc. He was discharged two days later.

Summary and Conclusions

In our opinion the outcome of this case would have been fatal without the administration of penicillin. On two occasions the patient showed cutaneous reactions to non-crystalline sodium penicillin, and he also exhibited a positive intracutaneous test to this substance. Subsequently he was able to tolerate crystalline penicillin without any reaction whatsoever. We believe that this experience proves that, in some patients at least, the reactions which have been observed with the administration of commercial penicillin are due to the incorporated impurities rather than to the penicillin *per se*[3].

3. Since this paper was prepared, 3 other patients who did not tolerate non-crystalline penicillin were able to tolerate crystalline penicillin "G".

The comprehensive viewpoint. Osler's insistence on a solid pathologic foundation for medical understanding and his careful clinical observations marked an epoch in the development of medicine. Unfortunately his warmth and human understanding and his intuitive appreciation of emotional factors in illness could not become a part of our medical heritage. The body is still divided into many organs and systems, specialists look upon disease from their narrow viewpoint, and the curriculum is built up by introducing more and more special points of view. As a consequence, the comprehensive viewpoint, which is so necessary to the study of illness as an aspect of behavior, can make little headway. The medical history form which we give to our medical students reflects this organic approach and this age of specialization, and as a consequence we look in vain throughout a long history for some evidence of the human being who is sick.—Edward Weiss: Psychosomatic Diagnosis, Am. Practitioner 1:160 (Nov.) 1946.

THE USE OF RECTAL PENTOTHAL SODIUM IN OBSTETRICS

ERNEST W. FURGURSON, M.D.

PLYMOUTH

Although the ideal anesthetic for obstetric cases has not yet been discovered, the use of rectal pentothal in conjunction with demerol and scopolamine intramuscularly seems to provide a close approach to the ideal means of assisting the mother through the apprehension, fear, and pains of labor.

After employing intravenous pentothal both in private practice preceding the outbreak of the war and in the combat areas during the war, I had the opportunity of using it in the treatment of many combat soldiers who were returned to this country because of moderate and severe anxiety states, battle fatigue, and numerous other disturbances of a psychogenic nature[1]. Hellman and his co-workers[2] reported a series of 1415 deliveries under sodium pentothal anesthesia given by the intravenous method. Although they were very enthusiastic about the use of this drug in operative cases, they stated that intravenous sodium pentothal anesthesia is not suitable for spontaneous delivery; the patient, semi-conscious, often moves about under the stimulation of pains, so that the needle frequently becomes dislodged from the vein and gives rise to serious mechanical difficulties.

After my return to private practice, I began to use pentothal sodium *per rectum* in the majority of obstetric cases. While I realize that no absolute conclusions can be made on the basis of my small series of 30 cases, I am presenting this paper in the hope of stimulating further study on the use of rectal pentothal in obstetrics.

Dosage

Reports on the use of rectal pentothal in obstetrics have been published by Tonn[3] and by Kotz and Kaufman[4]. In both these reports the suggested dosage is 1 Gm. of pentothal per 50 pounds of weight, and Tonn states that "the dosage necessary for continued anesthesia was found to be about 1 gram about 1½ hours after the primary instillation, and repeated again when necessary." It has been our experience, however, that the intramuscular administration of demerol in doses of 50 to 100 mg. (1 to 2 cc.) and of scopolamine in doses of 1/200 grain during the first stage of labor greatly enhances the action of rectal pentothal and reduces the required dosage of the latter drug. In our series a single dose of 1 Gm. per 65 pounds of body weight proved to be sufficient in practically every case. We have never found it necessary to use more than a total of 1/100 grain of scopolamine in any labor.

Method of Administration

On admission, a careful physical examination is done. This includes a rectal examination, following which the nurse prepares the patient with a thorough scrub, shave, and a good cleansing saline enema. (Tonn[3] and Weinstein[5] have reported that a soapsuds enema seems to lessen the effect of the drug.)

Prior to the administration of pentothal, demerol and occasionally scopolamine are administered intramuscularly at one- to three-hour intervals until the cervix has dilated to about 3 cm. in multiparous patients and to 4 cm. in primiparas. When a primipara has a long, slowly effacing cervix, pentothal is sometimes withheld until effacement is almost complete.

Each patient has been weighed on recent visits to the clinic prior to admission to the maternity ward. In order to prevent an enema effect, the calculated dose of pentothal is mixed so that 7 cc. of water is used for each gram of pentothal. A French catheter, size 12 to 16, is then attached to a 30 cc. syringe containing the pentothal mixture. After lubrication, the catheter is inserted for 6 to 8 inches into the rectum, with the patient in the prone position on her left side. Following instillation of the drug, the catheter is rapidly withdrawn and pressure is exerted against the anal orifice with a gauze sponge to prevent any loss of the drug. A sensation of drowsiness and tingling in the

Read before the Seabord Medical Association, Kinston, December 3-5, 1946.

1. Grinker, Roy R. and Spiegel, John P.: Men under Stress, Philadelphia, Blakiston, 1945.
2. Hellman, L. M., Shettles, L. B., Manahan, C. P., and Eastman, N. J.: Sodium Pentothal Anesthesia in Obstetrics, Am. J. Obst. & Gynec. 48:851-860 (Dec.) 1944.
3. Tonn, G. R.: Experience with Rectal "Pentothal" Sodium in Obstetrics, South. M. J. 39:154-157 (Feb.) 1946.
4. Kotz, J. and Kaufman, M. S.: Present Status of Obstetrical Anesthesia, Anesth. & Analg. 23:66-73 (March-April), 1944.
5. (a) Weinstein, M. L. and Light, G. A.: Basal Anesthesia with Pentothal Sodium, Anesth. & Analg. 22:68-80 (March-April) 1943; (b) Weinstein, M. L.: Rectal Pentothal Sodium: A New Pre- and Basal Anesthetic Drug in the Practice of Surgery, Anesth. & Analg. 18:221-223 (July-Aug.) 1939; (c) Weinstein, M. L. and Adams, E. L.: Further Observations on the Use of Rectal Sodium Pentothal, Anesth. & Analg. 20:229-232 (July-Aug.) 1941.

extremities usually ensues within two to five minutes.

Inhalations of nitrous oxide and oxygen are occasionally instituted during the second stage of labor, when additional doses of pentothal would be necessary otherwise. The required mixture may vary considerably in different patients[6], but the proportion of nitrous oxide need not be greater than 50 to 80 per cent. With the use of this routine, we have never found it necessary to administer rectal pentothal a second time.

Whenever necessary, perineal repair is performed with little or no discomfort to the patient by the use of metycaine or novocaine instilled locally. This is done by "orange-peeling" the perineum with one of these local anesthetic agents along the direction of the anticipated left mediolateral episiotomy as the perineum is stretched by the oncoming fetus.

It was found unnecessary to resort to the use of antidotes in our series of cases. However, 100 per cent oxygen should be available for an emergency in case of overdosage. Coramine, metrazol, 0.3 per cent picrotoxin, and 10 mg. of benzedrine sulfate in 1 cc. ampules for intravenous administration may also be used in cases of barbiturate poisoning.

Effects on the Mother and Child

In our series of 30 deliveries, complete analgesia and amnesia were experienced by all except 2 mothers. These two were the first patients delivered in our clinic by this method, and neither demerol nor scopolamine was used. Although most of the pains were relieved, nitrous oxide and oxygen were employed in these 2 cases after the cervix was completely dilated. In practically every other case the patient slept continuously, the anesthetic effects beginning within three to fifteen minutes following the rectal administration of the pentothal. Although the mother usually regained full consciousness within 30 to 60 minutes after being returned to her room, drowsiness and complete relaxation frequently continued for two to eight hours thereafter. No untoward reactions to the drug were noted.

It is believed that the cervical and perineal relaxation brought about by rectal pentothal serves to shorten the first stage of labor, thus reducing the death rate in babies during the first week of life. No maternal or fetal death has occurred in our series, and there were only 3 cases in which the baby required cardiac or respiratory stimulation, or both. It is our belief that the apnea in these 3 cases was attributable to causes other than rectal pentothal. In all other cases, the baby began life with a lusty cry immediately following delivery.

Possible Contraindications

In view of the fact that pentothal may be eliminated through the liver and may add to degenerative changes in that organ, one should be cautious in employing this drug in pre-eclampsia. Weinstein and his co-workers, however, have reported that neither partial hepatectomies nor unilateral nephrectomies affected the duration of anesthesia with sodium pentothal in rats[5]. This finding would indicate that neither the liver nor the kidneys contribute to the destruction of the drug in the body.

In cases of prematurity, it might be advisable to use some other anesthetic in order to avoid the possibility of inhibiting the initial respiratory effort in the newborn infant. Hellman and his co-workers[2] state:

> "This possibility cannot be denied, but on the other hand, it may be stated that our prematurity mortality with sodium pentothal has been slightly less than with other forms of anesthesia . . . as far as we have been able to determine, there was no instance in the entire series of 1,415 cases delivered under sodium pentothal anesthesia (intravenously) in which this anesthetic agent was directly responsible for an infant's death, or in which it played any demonstrable role."

Employment of pentothal is contraindicated in patients with any involvement of the glottis, trachea, or other organs which might cause respiratory embarrassment. It has been our observation that, excluding primiparas with malpositions or pelvic anomalies, cases of pre-eclampsia or prematurity, and patients with primary anemias or dangerous heart conditions with decompensation, this drug can safely be used in practically all other types of obstetric cases. It is believed that nembutal, seconal, and other barbiturates should not be used in conjunction with rectal pentothal.

Summary

1. We have found sodium pentothal, administered rectally in small volume, to be a satisfactory anesthetic agent in obstetric cases, especially when it is used in conjunc-

6. Lundy, J. S. et al.: Annual Report for 1945 of the Section on Anesthesiology, Proc. Staff Meet., Mayo Clin. 21:301-313 (Aug. 7) 1946.

tion with demerol and scopolamine given intramuscularly. It is not the purpose of this paper to claim that it is the anesthetic of choice in all cases, or even that it is the best anesthetic available.

2. The dose of the drug can be easily calculated, and it is easily administered. The patient is usually quieter and much less apprehensive under sodium pentothal anesthesia than with the other barbiturates. In addition, the mental stress suffered by many patients under spinal anesthesia is eliminated.

3. Very little inhalation anesthesia is needed, and induction with nitrous oxide and oxygen is smooth.

4. No depressive after-effects were noted following the use of pentothal, and the patients awakened soon after delivery.

5. The child usually displayed a healthy pink color, and respiratory difficulty was seldom noted. No ill effects on the baby could be traced to the careful use of pentothal.

6. The first stage of labor is shortened by rectal pentothal, and we noted no tendency toward hemorrhage, relaxation of the uterus, or placental retention.

7. Total amnesia was present in almost every case, this state being reached shortly after administration of the drug and continuing until the patient had been returned to her room.

8. All patients were pleased with their experience with the drug, and multiparas stated that it was much better than anesthetics used in previous deliveries.

Conclusion

I have used pentothal sodium rectally, in conjunction with demerol and scopolamine intramuscularly, in 30 deliveries, with satisfactory results. It is believed to be the least dangerous of the barbiturates in normal labor. Like any general anesthetic, however, the drug should be used with caution, especially in cases of pre-eclampsia and prematurity.

We need not assume that tuberculosis is permanently and ineradicably engrafted upon our civilization. On the contrary, the evidence indicates that in this country the balance is already against the survival of the tubercle bacillus; and we may reasonably expect that the disease will eventually be eradicated. There can be no certainty of this result, but it is an expectation sufficiently well grounded to justify shaping our tuberculosis control program toward this definite end. — Wade Hampton Frost, Am. Jour. of Pub. Health, August, 1937.

DEMEROL-SCOPOLAMINE ANALGESIA IN LABOR

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WASHINGTON

Five years of intensive research and practical experience with the use of demerol in more than 8000 published and thousands of unpublished cases have established this drug as an effective analgesic agent in labor. Demerol-scopolamine analgesia is apparently harmless to mother and baby. It does not weaken uterine contractions or prolong labor, and there are no postpartum complications known to be due to this combination of drugs.

Demerol is a synthetic drug. Chemically, it is the hydrochloride of the ethyl ester of 1-methyl 4-phenyl piperidine 4-carboxylic acid[1]. Demerol exhibits properties analogous to those of both atropine and morphine. Its analgesic potency is midway between that of codeine and morphine, and its spasmolytic effect is slightly weaker than that of atropine. It relaxes smooth muscles, and in that respect differs from morphine. Demerol causes no demonstrable effect on the kidney function or blood pressure, and is rapidly eliminated from the body. It does not depress the respiratory center of either the mother or the baby, and the vast majority of babies born under demerol analgesia cry immediately or soon after birth. In Schumann's series[2] 82 per cent of the babies breathed at once; while 15 per cent were somewhat slow to breathe, this percentage is not unusually high. Some of the disagreeable effects of demerol are nausea, dizziness, pallor, and dryness of the mouth; these occur only occasionally, however, and are of no serious consequence.

Since demerol has no amnesic effect, it has been used in combination with the barbiturates, nembutal and seconal, or with scopolamine[3]. Reports on the use of demerol in England[4] and in this country have shown that demerol alone in doses of 100 to 650 mg. produces satisfactory analgesia in labor;

Read before the Seaboard Medical Society, Kinston, December 3-5, 1946.

1. Literature on demerol from the Winthrop Chemical Company, Inc.
2. Schumann, W. R.: Demerol (S-140) and Scopolamine in Labor; Study of 1,000 Cases, Am. J. Obst. & Gynec. 47: 93-104 (Jan.) 1944.
3. Carter, H. M.: The Role of Demerol in Obstetrics, Wisconsin M. J. 44:1170-2 (Dec.) 1945.
4. Cripps, J. A. R., Hall, B. and Haultain, W. F. T.: Analgesia in Labor: Record of 102 Cases Treated with Pethidine, Brit. M. J. 2:498-500 (Oct. 14) 1944.

amnesia results if scopolamine or a barbiturate, such as seconal or nembutal, is given in combination with it. Labor is shortened somewhat by the antispasmodic action of demerol on the cervix[4].

Scopolamine and demerol are especially indicated for preoperative analgesia when cesarean section is to be performed under local, spinal, or ether anesthesia. When these drugs are given preoperatively, the baby is usually vigorous and prompt to cry, and the mother is in excellent condition. Demerol is also useful as an analgesic agent in mothers giving birth to premature babies, since it does not depress the baby's respiratory center[5]. Statistics show that 91 per cent of premature babies born under demerol analgesia are in satisfactory condition at birth[2].

Experience with the Use of Demerol-Scopolamine Analgesia at the Tayloe Hospital

For a number of years in the past I had been using morphine, scopolamine, and one of the barbiturates (nembutal) with excellent analgesic and amnesic effect in labor. In many cases, however, the mothers who were given this combination of drugs were very restless and uncooperative, and the babies were sometimes resuscitated with much difficulty and were slow in learning to nurse. Morphine is known to have a depressing effect on the respiratory center.

Between March 20, 1946, and November 20, 1946, there were 589 deliveries in the Tayloe Hospital. During this period morphine, scopolamine, and nembutal were given to 233 patients, and a combination of demerol and scopolamine to 356 patients in labor—191 primiparas and 165 multiparas. These drugs were also used as a pre-anesthetic analgesic in 15 cesarean sections.

There was no routine method of administering demerol and scopolamine; each case was individualized. The patients were told that when they wanted something to relieve the pain, they could have it. Most patients asked for an analgesic as soon as regular contractions were definitely established and the pains were occurring about every eight to ten minutes. Nembutal, grains 3, was given at first by mouth to the majority of primiparas. After a short interval—thirty to sixty minutes—100 mg. of demerol and 1/100 to 1/150 grain of scopolamine were given intramuscularly. This dose of demerol and scopolamine was repeated as often as necessary to relieve pain — seldom more often than every two hours. In 13 multiparas, when the labor was rapid and dilatation of the cervix was nearly complete, 100 mg. of demerol in 10 cc. of sterile water was given slowly by the intravenous route with 1/100 grain of scopolamine. Splendid analgesic and amnesic effect was obtained.

Demerol usually produces its analgesic effect in about twenty minutes, and the patient often sleeps between pains. Successful analgesia and amnesia were achieved in approximately 70 per cent of the 356 patients who were given demerol and scopolamine; all experienced some degree of amnesia and analgesia.

There were 4 premature stillbirths in this series and 2 fetal deaths from intracranial hemorrhage which could not be attributed to demerol and scopolamine. Approximately 83 per cent of the babies were very active, and breathed and cried immediately after birth. The remainder required only a minimum of stimulation and were in excellent condition a short time after birth.

Conclusions

From reports which I have read and from the observation of this small series of cases, it is my opinion that demerol with scopolamine is a safe and efficient means of providing analgesia and amnesia in labor, for the following reasons:

(1) It does not endanger the life of the mother or have any harmful effect on her. (2) It has no harmful effect on the child. (3) It does not prolong labor, and the necessity for operative interference is not increased by its use. (4) It does not prolong the third stage of labor and does not tend to cause postpartum hemorrhage. (5) It is simple to give, and there are no risks associated with its administration.

5. Gilbert, G. and Dixon, A. B.: Observation on Demerol as an Obstetric Analgesia, Am. J. Obst. & Gynec. 45:320-326 (Feb.) 1943.

If patients were allowed to talk more and were examined less it would be a good thing for medicine in general. As one of our patients, who had been through the mill of medical investigation recently remarked, she was suffering from "testitis." Indeed how numerous are the patients who have been examined again and again by means of the x-ray, chemical studies, and various other expensive and complicated methods, accumulating a sheaf of papers, and with an end result harmful rather than helpful because the diagnosis was obscured by concentration on a part rather than on the whole.—Edward Weiss: Psychosomatic Diagnosis, Am. Practitioner 1:160 (Nov.) 1946.

"SMALL UNRECOGNIZED STROKES"

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GREENSBORO

For many years Dr. Walter C. Alvarez has been writing and talking, with his usual clarity and common sense, about thromboses of small cerebral vessels in "silent" areas of the brain. Although such strokes are quite common and are easily recognized if one is on the look-out for the condition, the fact that most patients have no paralysis or other frank neurologic signs causes them to be overlooked by many physicians. Except for the writings of Alvarez[1], there is very little to be found about this condition in medical literature[2].

I do not expect to add anything original to the knowledge of this condition, since Alvarez has covered the ground thoroughly —especially in *Geriatrics* for May-June, 1946[1f]. The purpose of this article is to emphasize the frequent occurrence of small unrecognized strokes, and the fact that such strokes usually simulate disorders of the gastrointestinal tract. The fact that 4 patients with fairly typical histories of "silent strokes" were admitted to the North Carolina Baptist Hospital on one private medical service in six weeks shows how common this condition is. The additional fact that all four were sent in as gastroenterologic problems warrants another paper on the subject, using these 4 consecutive cases as a basis.

Diagnosis

The only way to diagnose a small stroke is by a carefully taken history. Physical findings and laboratory procedures offer little, if any, help. The characteristic feature of a small stroke is its *suddenness of onset.* At a certain minute of a certain day a well person at or past middle age suddenly becomes ill, and thereafter never regains his former health.

The onset may be marked by a dizzy spell or sudden mental confusion. Some patients fall to the ground, and for a short time afterwards are mentally confused. In others sudden abdominal pain is the first symptom. Many silent strokes probably occur during sleep, when the blood pressure is low, and the patient awakens in the morning feeling ill, with headache or abdominal distress. If a history of sudden transient dysphonia or ropy saliva is also elicited, the diagnosis of a small stroke is further strengthened. In some cases even a slight paralysis may be found. Both large and small strokes may occur in the same patient.

Very few small strokes are diagnosed at the onset, but this is probably because most physicians are not on the look-out for this condition. Many of these patients are referred to the gastroenterologist because of anorexia, epigastric pain on eating, nausea, vomiting, constipation, distention, belching, flatus, sudden unexplained loss of weight, or sudden attacks of diarrhea. These gastrointestinal symptoms, for which needless operation is sometimes performed, are probably caused by involvement of the vagus nerve. Typical complaints other than those related to the gastrointestinal tract include weakness, tiredness, and a "run-down feeling." Often a diagnosis of a "nervous breakdown" is made.

Alvarez has described other ways in which a silent stroke may manifest itself. An aged person may suddenly begin to have insomnia, or to shuffle his feet and take small, unsteady steps. Many persons, previously healthy and good-natured, suddenly age, lose their ability to work, and perhaps become ill-natured and difficult to get along with. The patient may not notice the change in his personality, but his family and business associates will say that he suddenly lost his former drive and ambition, became forgetful, and apparently suffered a "nervous breakdown," from which he never fully recovered.

If the doctor has known the patient before, he may be led to suspect a small stroke by the sudden development of slovenly habits in a person who had previously taken pride in his appearance. Some of these patients lose interest in former pleasures, and actually can no longer tolerate them. Emotional instability is common, often leading to profound depression and perhaps thoughts of

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1. Alvarez, W. C.: (a) Patients Who Are Incapacitated by a Little Indigestion, M. Clinics North America 15:1409-1417 (May) 1932. (b) Unrecognized "Strokes" and the Gastro-Enterologist, Am. J. Digest. Dis. & Nutrition 2:90-92 (April) 1935. (c) Small Unrecognized Strokes: A Cause of Puzzling Indigestion, Proc. Staff Meet., Mayo Clinic 10:293-296 (May 8) 1935. (d) Nervousness, Indigestion, and Pain, New York, Paul B. Hoeber, Inc., 1943, pp. 252-254. (e) Small Unrecognized Strokes: A Common Cause of Illness in Older Persons, J. Michigan M. Soc. 43:389-392 (May) 1944. (f) Cerebral Artriosclerosis, Geriatrics 1: 189-216 (May-June) 1946.
2. Evans, H. and Harding, G. T.: "Strokes" Without Paralysis: Problems of Diagnosis, Ohio State M. J. 34:768-773 (July) 1938.

suicide. Spells of crying without any apparent reason are another manifestation of emotional instability.

A fall in blood pressure following the onset of a patient's complaints is further evidence for a small stroke. Hypertension often, but not always, precedes a stroke. In most cases evidences of arteriosclerosis are found in the eyegrounds or peripheral arteries, or on x-ray films.

Prognosis

Patients who have had small strokes seldom show much improvement, although they may live for many years after the first such episode. Telling the patient to "snap out of it" or to "buck up" will do no good. It is important to recognize this condition, however, since repeated diagnostic tests to rule out organic disease are a waste of money. Informing the family frankly of the nature of the disease will cause them to be more understanding with the patient. Since his ability to make decisions is often impaired or lost, he should be advised against assuming business responsibilities.

Treatment

The only therapy for this condition is purely symptomatic. Sedatives and antispasmodics may be used as indicated, but will not give complete relief of symptoms.

Pathologic Findings

In patients who have come to autopsy, the brain has shown many small necrotic areas due to thromboses. With each thrombosis the patient aged a bit and lost more of his ambition, drive, and ability to work.

Case Reports

The following cases, which were seen on one private medical service within a period of six weeks, illustrate the histories and findings which are characteristic of the silent stroke.

Case 1

A 49-year-old married woman entered the hospital on March 29, 1945, for treatment of hypertension (nine years' duration), nausea and vomiting (about two years), and habituation to codeine (about six months). The patient had had repeated attacks of pyelonephritis since childhood, and was known to have had hypertension for at least nine years. During this period she had experienced three major strokes, the last leaving as a residuum a decrease in sensation over the entire left side of her body.

About two years before admission, the patient suddenly after dinner experienced pain in the right upper quadrant, followed by nausea and vomiting. Her nausea and vomiting continued, and from that moment on she lost her appetite. Her daughter, a trained nurse, testified that her mother had almost a complete change of personality, becoming apathetic and emotionally unstable. In her daughter's words, "She became almost like a child." She lost sixty pounds in weight.

In January, 1944, her left kidney was removed and the pathologist made a diagnosis of chronic pyelonephritis. She was given codeine for relief of pain after this operation, and had continued to use it.

Physical examination showed a well developed, well nourished woman who appeared mentally unstable and cried frequently for no apparent reason. Positive findings were arteriosclerotic changes in the retina, a blood pressure of 190 systolic, 135 diastolic, and slight enlargement of the heart. There was diminished sensation over the entire left side of the body.

Kidney function tests, blood chemistry studies, and x-ray examination of the stomach, duodenum, and gallbladder were normal. During her stay in the hospital her blood pressure varied between 190 and 120 systolic, 135 and 70 diastolic.

The final diagnosis was a small stroke, in addition to hypertension and previous hemiplegia.

Case 2

A 73-year-old farmer was well until September, 1944. At that time, while he was working in his watermelon patch, he had a sudden onset of epigastric pain. From that moment on he had anorexia, epigastric pain on eating (not related to amount of food), and bloating. He lost his cheerful, alert disposition and became querulous and apathetic. Although his local physician said that his blood pressure before the onset of his present illness had been elevated, it was found to be normal afterwards —136 systolic, 84 diastolic.

Physical examination was negative except for generalized arteriosclerosis. X-ray studies of the gastrointestinal tract were normal.

A diagnosis of a small stroke was made.

Case 3

A 75-year-old lawyer was admitted to the hospital for the first time on November 18, 1943. He had been well until October, 1943, when, during an upper respiratory infection, he suddenly lost his appetite, became weak and tired, and had a complete change of personality overnight. He complained of a peculiar, "deathly sick feeling" in the epigastrium, which was present all the time. At first the peculiar feeling was relieved slightly by food, but as time went on he got no relief. He required sedatives for sleep, but still slept little. Whereas he had formerly loved to fish, go to the movies, listen to the radio, and play cards, none of these activities appealed to him after the stroke.

He had a history of chronic alcoholism, and had had a peptic ulcer, diagnosed by x-ray, two years previously. The stools were negative for blood. X-ray examination of the gastrointestinal system and the gallbladder was negative. The patient was discharged with the diagnosis of a silent stroke.

His second admission was on March 31, 1945, when he complained of a continuation of his former symptoms. By this time he could no longer remember lifelong friends, and had degenerated considerably. His memory was so bad that he could not remember what he had read in the newspaper from one minute to the next.

Another x-ray of the stomach and duodenum was normal. Various sedatives and antispasmodics were used, with only minimal relief. The patient suffered

all the time, and finally committed suicide on May 10, 1945, about one and a half years after the stroke.

Case 4

A 64-year-old woman was admitted to the hospital on May 1, 1945. She had been well until August, 1944, when she awoke one morning feeling weak and tired. She had not felt well since then. She had only a slight change in personality at that time, but she seemed to age a bit. Since then some neighbors had commented on the fact that she was "going downhill."

She entered the hospital because of weakness. Three weeks before admission she had a sudden onset of diarrhea, without blood or pus. For several days afterwards she experienced pain on eating. One week later she had an attack of influenza, with cough and anorexia. This lasted for a few days, and she had been weak since then.

She was known to have had hypertension for at least fifteen years, but her blood pressure had been lower during the three weeks before admission. She had lost between 15 and 20 pounds during this time. She had had thyrotoxicosis in 1933, which was relieved by thyroidectomy.

Physical examination was negative except for minimal arteriosclerotic changes in the retina and absent ankle jerks. Her blood pressure while she was in the hospital varied between 160 and 130 systolic, 100 and 70 diastolic. Urinalysis showed a faint trace of sugar, and the glucose tolerance test a diabetic type of curve. The basal metabolic rate was +10 per cent. A barium enema was negative, and x-ray examination of the chest showed "slight left ventricular hypertrophy, probably on an arteriosclerotic basis."

The diagnosis was a silent stroke in August, 1944, in addition to mild diabetes mellitus and post-influenzal asthenia. There was some question as to whether the episode of epigastric pain and diarrhea three weeks before admission had been due to another silent stroke.

Summary

The "small unrecognized stroke" described previously by Alvarez has been discussed, and 4 illustrative cases reported. It has been pointed out that this condition, although it is often overlooked, is relatively common, and may usually be diagnosed from the history. The characteristic feature is the *sudden onset*, with one or more of the following symptoms: a change in personality, impairment of memory, emotional instability, gastrointestinal disturbances, unexplained loss of weight, and sudden aging. The prognosis is poor for return to the normal level, but good for life, and this fact is important in advising the patient and his family.

If the physician who is treating old persons will keep the small unrecognized stroke in mind, it will help him to explain many puzzling cases and will save many of his patients much unnecessary expense.

Only 85,000 of the 14,000,000 World War II veterans had exhausted their entitlement to unemployment allowances by last Dec. 1, Veterans Administration said.

INTESTINAL OBSTRUCTION

C. A. WOODARD, M.D.
WILSON

The principal causes of intestinal obstruction are paralytic ileus, pressure from without the intestinal tract (tumors), adhesions, strangulation, atresia, growths in the bowel wall, strictures, foreign bodies (such as gallstones), indigestible masses of food, hernia, fecal masses, mesenteric thrombosis or embolism, volvulus, and intussusception.

Paralytic ileus is caused more by the action of the sympathetic nerves than by local toxins. Animal experiments have shown that inflamed segments of bowel respond to local stimulation almost as well as normal bowel. The use of spinal anesthesia will remove the inhibiting influence of the sympathetic nervous system, and permit the stimulant effect of the vagus nerve to move the gas.

Tumors and *strictures* of the bowel wall may be benign or malignant. Benign growths may be due to syphilis, gonorrhea, previous infarction, or trauma. Lymphogranuloma venereum may cause stricture of the rectum, and occasionally healing of ulcerative colitis may produce stricture of the colon. Malignant growths may produce obstruction by projecting into the bowel, or by constricting it.

An inflamed gallbladder may adhere to the bowel, and pressure from a large stone may cause a necrotic opening, permitting the stone to escape into the bowel and cause a blockage.

Perhaps the most frequent cause of intestinal obstruction in my experience is *strangulated hernia.* Less frequent and more difficult of diagnosis are *thrombosis* and *embolism* of the mesenteric vessels, causing gangrene of the corresponding segment of the bowel.

Obstruction may be caused by pressure from *inflammatory masses* in the pelvis, from *ovarian cysts,* or from *solid tumors.*

Pathologic Physiology

The intestinal canal, from the pyloric end of the stomach to the ileocecal valve, normally contains swallowed air, digestive juices, and gases from the fermentation of

From the Woodard-Herring Hospital, Wilson, N. C.
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food in the process of digestion. The normal advance of the contents is so rapid that the gases do not have time to separate out and collect in sufficient volume to show in an x-ray film. If the ileocecal valve is working, the contents of the small intestine pass into the colon. Normally they cannot get back, and in the presence of obstruction below, the colon becomes a closed tube which is increasingly distended.

Diagnosis

The cardinal symptoms of intestinal obstruction are colic and vomiting, and these may be the only symptoms in the beginning. The pain is spasmodic, and is due to waves of peristalsis. The vomiting is at first reflex, and later becomes regurgitant and perhaps projectile. If the obstruction is in the colon, however, and the ileocecal valve is intact, there may be no vomiting. The pulse at first is not disturbed and the temperature is normal. The patient may have no tenderness or rigidity, and the distention may not develop until later.

The absence of early physical findings may divert one from the diagnosis. If there is no history of dietary indiscretion and no diarrhea, the symptoms of colic and vomiting should make one suspect obstruction. It should be kept in mind that, even in the presence of complete obstruction, enemas may produce expulsion of gas and fecal matter until the bowel below the obstruction has been emptied.

As the case progresses, the repeated vomiting produces dehydration. The imprisoned gas causes distention, the pulse quickens, and the patient develops an anxious look. After the bowel below the obstruction is emptied, there is no passage of gas or fecal matter, and the vomiting becomes fecal in type.

The presence of borborygmus may aid in the diagnosis. It is a gurgling sound and is synchronous with the colicky pain. If the distention is great, the sound is metallic in character. In cases of chronic intestinal obstruction, waves of peristalsis may be felt passing across the abdomen, and, in a good light, may be seen. This phenomenon is noted only after sufficient time has elapsed for the muscles of the intestinal wall to become hypertrophied, and is not observed in acute cases. Rigidity is not marked until the irritation of the peritoneum has had time to produce spasticity of the muscles of the abdominal wall.

If the lesion is due to a band and one end is attached to the parietal peritoneum, there may be point tenderness at the site of the attachment. If the obstruction is due to strangulation, the interference with the blood supply causes blood and serum to pass into the peritoneal cavity, irritating the peritoneum and producing tenderness. In cases of intussusception, a sausage-shaped or globular tumor may sometimes be palpated. In cases of malignancy advanced to the point of causing obstruction, a mass is usually to be felt.

X-ray findings

If the case is of the paralytic type, the gas may be distributed throughout the small and large intestine. If the condition is of the obstructive type, the gas is seen only above the obstruction. In cases of small bowel obstruction, gas is centrally disposed and the x-ray markings are transverse, showing the so-called "step-ladder" effect. If the colon is obstructed, the gas is seen at the sides.

Treatment

The treatment of intestinal obstruction may be conservative or operative. In the absence of tenderness, which is the most suggestive sign of strangulation, it is practicable to try conservative measures—decompression of the bowel and maintenance of the electrolyte and fluid balance of the body.

Decompression may be accomplished by the introduction of a tube into the bowel through the nose. The Miller-Abbott double lumen, balloon-type tube, or the Levine tube with the Wangensteen apparatus may be used. Our experience has been limited to the latter, which we have found to be satisfactory. It consists of two bottles, a duodenal tube containing numerous perforations for a distance up from the leaded tip, a Y-shaped connecting tube between the duodenal tube and the upper bottle, and a glass tube extending from the proximal tube through the perforated stopper into the upper bottle. Water in the upper bottle drains through a tube into the lower one, creating a partial vacuum. When the apparatus is working, the patient is allowed to drink water freely. Some of it is absorbed, but most of it is siphoned into the bottle, bringing gas and gastric and intestinal contents

with it. The distention is thus reduced and much of the highly toxic and infectious material is evacuated.

Patients as a rule feel better in a few minutes. The nasal tube is not so uncomfortable as it seems, and most patients bear it with a degree of grace because of the relief it affords. Some protest to the point of forcing its discontinuance, but in suitable cases it gives dramatic results. The relief is not merely symptomatic, for in many cases the patient has no further symptoms and goes on to recovery.

In cases of strangulation, mesenteric thrombosis, or complete blockage from malignant growths, constricting bands, volvulus, and the like, surgical interference becomes necessary, but pre-operative use of the suction apparatus reduces the distention, improves the condition of the patient, and makes the operation less hazardous. The wise surgeon recognizes the limitations of this method and proceeds without undue delay to perform the surgical procedure indicated.

Case Report

A female patient, aged 38, had an abdominal hysterectomy for fibroid tumor. Two months after the operation she was taken suddenly with nausea, vomiting, and intense spasmodic abdominal pain. She was brought to the hospital promptly. There was no tenderness or rigidity, but some distention was present. Her temperature and pulse were normal.

An enema was given, and a fair amount of gas and fecal matter was evacuated. Her stomach was washed out, and she felt a good deal of relief temporarily. The vomiting and pain soon started up again, however. Another enema was given, and some gas and fecal matter were again obtained. The use of a Wangensteen suction apparatus reduced the distention and gave the patient some relief, but the colicky pain shortly recurred.

By this time a definite diagnosis of intestinal obstruction was made and operation was advised. The family refused consent at first, but finally agreed to an operation, which was performed seven days after the beginning of the attack. A cord-like adhesive band was found constricting the small intestine about its middle. So tight was the constriction that pressure necrosis had virtually divided the intestine, and it came apart on being lifted up without traction. The peritoneal cavity was badly soiled.

The necrosed ends of intestine were trimmed away, and the openings closed. A side-to-side anastomosis was established. Sulfanilamide was instilled, and the wound was closed without drainage. Penicillin was administered intramuscularly. Five blood transfusions were given—one before and four after the operation. Glucose in Ringer's solution was used liberally throughout until adequate nourishment could be taken by mouth.

The convalescence was relatively easy, except for the development of a small abscess in the abdominal wall near the wound. This was incised, and healed promptly. From then on recovery was uneventful.

Discussion of Case

Attention is directed to the following points in this report:

1. The obstruction did not appear to become complete for several days, since some gas and fecal matter were obtained by enemas given during this time.

2. The deceptive periods of relief between the episodes of vomiting and colic made it difficult to arrive at the decision that surgery was indicated.

3. Our impression was that the penicillin was an important factor in this patient's recovery.

Conclusion

When a patient has an attack of colic, perhaps with vomiting, that can not be accounted for otherwise, intestinal obstruction should be considered. Once a diagnosis of intestinal obstruction is made, prompt surgical intervention should be urged. Early operation is attended with little risk, whereas undue delay multiplies the hazard.

Discussion

Dr. Foy Roberson (Durham): In his usual thorough-going way Dr. Woodard has covered the subject of intestinal obstruction in such a fashion that there is little one can add.

Intestinal obstruction, if neglected, is still a deadly condition; but under modern methods of diagnosis and treatment it is not seen as often as formerly, nor is the morbidity or mortality as great. No longer are patients allowed to remain at home until they are in a serious condition, and then rushed to the hospital for an emergency operation. The alert medical man, the well trained house doctor, the nurse, and even the laity usually recognize abdominal pain as a significant warning of danger ahead, and seek surgical consultation. The patient can then be treated by decompression and maintenance of fluid balance, and prepared for whatever surgical procedure seems appropriate.

Dr. H. Max Schiebel (Durham): In the past two years we have seen 4 patients with malignancy of the large bowel who had as their first presenting symptom an acute intestinal obstruction. Three of the patients were young—one 17, one 26, and one 29—, while the other was in the early sixties. No mass could be felt in these patients, and we thought that a small lesion must have ulcerated, causing sudden edema, with resultant obstruction.

With the Miller-Abbott tube or some other means of obtaining decompression, patients with intestinal obstruction can be prepared for surgery so that the whole lesion can be resected at the first operation.

I would like to cite as a warning one case which I saw in consultation. This patient had been operated upon several times in other hospitals for acute or chronic intestinal obstruction, and when he came to our hospital with obstructive symptoms we were loath to repeat an operative procedure. He was treated with a Miller-Abbott tube with suction, and recovered from the obstruction. He went home without further study, but returned in about eight

months with another bowel obstruction and had to be operated on. A malignancy of the transverse colon had developed sometime between the early operative procedures and the last one, and was already inoperable. This case shows the importance of having a gastrointestinal study made on every patient with obstructive symptoms before he leaves the hospital.

Maternal Welfare Section*

ECLAMPSIA

The last two maternal welfare articles have pointed out the gravity of the problem of toxemia of pregnancy in North Carolina. One third of the maternal deaths in our state result directly from the hypertensive complications of pregnancy. Many additional deaths occur as a result of other complications which are directly related to toxemia, such as abruptio placentae, cardiac failure, and others.

Eclampsia constitutes a major obstetric hazard. It is defined as convulsions or coma in a patient presenting hypertension, albuminuria, or edema.

Prognosis

The prognosis in eclampsia is always serious. It varies considerably, depending upon (1) the severity of the disease, (2) the time of occurrence of convulsions in relation to the duration of pregnancy and labor, (3) the underlying pathology, and (4) the method of management.

According to Dieckmann, eclampsia is to be considered severe if one or more of the following findings is noted: (1) more than ten convulsions, (2) coma, (3) fever, (4) pulse rate over 120 per minute, (5) respiratory rate over 40 per minute, (6) cardiovascular impairment, and (7) failure to respond to treatment.

The appearance of eclampsia early in pregnancy is an ominous sign. The management of antepartum eclampsia presents the greatest hazard because the problem of delivery is added to the specialized medical problem of the management of the convulsive state. For this reason, intrapartum and postpartum eclampsia have a more favorable prognosis.

*Prepared by the Maternal Welfare Committee of the Medical Society of the State of North Carolina:

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T. L. Lee, M.D. — Chairman

The preceding articles have pointed out that convulsions and coma resulting from nephritis complicated by pregnancy may appear identical to convulsions in the course of progressive, severe preeclampsia. The differential diagnosis of the basic pathologic lesion often depends primarily on the history. Occasionally an accurate diagnosis must wait until the patient is observed *post partum*. The essential points of accurate differential diagnosis were covered in the preceding articles on toxemia of pregnancy.

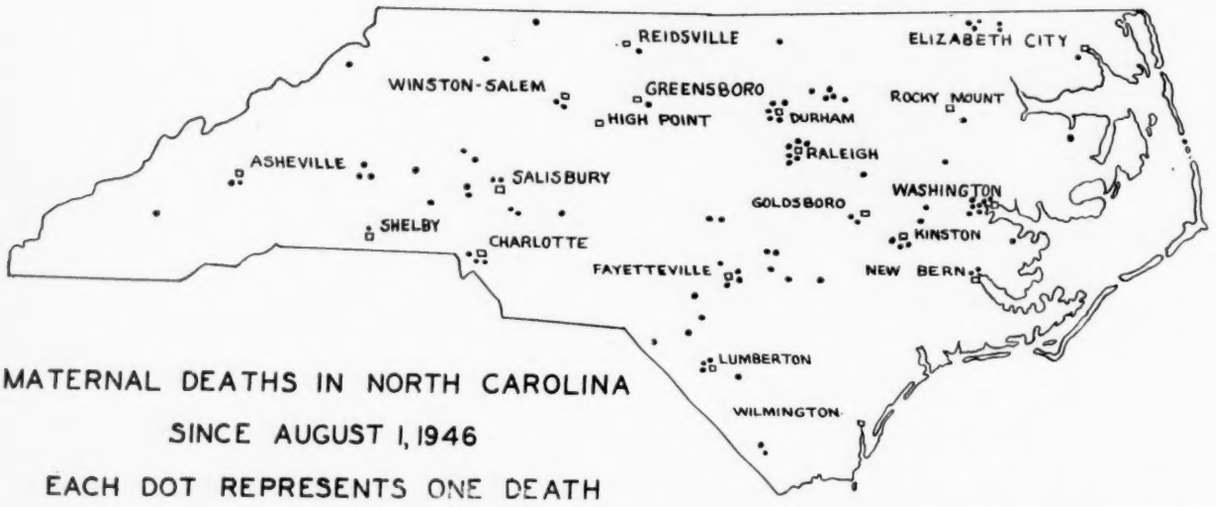
Management

The convulsive stage of eclampsia is characterized clinically by convulsive seizures, by hyperirritability alternating with coma, and by stupor and disorientation. Radical treatment to terminate pregnancy immediately is now universally condemned. Cesarean section is associated with a prohibitive mortality and has been discarded. Eclampsia cannot be treated in the home without unnecessary loss of life. It is essential that the patient have the constant supervision and therapeutic regimen which can be provided only in a hospital. Any convulsive or comatose patient seen in the home should be given morphine sulfate, grain ¼, and another dose of ⅛ to ¼ grain if convulsions are not controlled in fifteen to thirty minutes. The patient should then be transported to the nearest available hospital. A record of the medication given should invariably accompany the patient if she is referred to another physician for additional care.

Sedation

A careful evaluation of the patient and of her reaction to the initial sedative drug is important in the selection of additional sedative agents. The amount of sedatives given should be just enough to *terminate convulsions, prevent their recurrence, and control extreme restlessness and irritability.* Barbiturates are the drugs of choice to provide the complete rest necessary for proper management of this condition. If sodium phenobarbital is used, an initial subcutaneous dose of 5 grains should be given, followed by doses of 2 to 5 grains repeated as often as necessary to control restlessness.

Sodium amytal or sodium pentobarbital, 2 to 6 grains, may be given intravenously instead. These drugs must be given slowly —not more than 1 cc. of solution per minute.



The administration of the intravenous solution is stopped when the patient begins to sleep and when all restlessness disappears. The dose is determined by the amount required to produce sleep. A state of quiet rest can be maintained by the periodic administration of 3 to 6 grains of the drug selected by mouth or by rectum. The dose should be regulated so that the patient sleeps quietly when undisturbed but can be awakened to take fluids by mouth after the convulsions are fully controlled. A profound drug stupor is undesirable. Anoxia and acidosis are aggravated by the diminished respiratory activity, and the urinary output is apt to be further decreased.

Accessory drugs

Magnesium sulfate solution is of value in severe cases. It supplements the sedative drugs in the control of extreme irritability. Twenty cubic centimeters of 10 per cent magnesium sulfate solution should be injected slowly by vein in severe cases, or into the muscle when less urgent need is present. The dose should not be repeated unless convulsions recur or unless restlessness and irritability persist in spite of sedation. Calcium gluconate should be readily available, and 15 grains are given intravenously at once if serious respiratory depression or other unfavorable reaction follows the administration of the magnesium sulfate solution.

Fluid and glucose in distilled water should be used, and saline solution should be scrupulously avoided. No solution containing sodium should be administered, since sodium ion retention is a primary factor in the edema and oliguria which are present. The quantity and concentration of the dextrose solution given to the patient are determined by the clinical picture and by the hourly record of the fluid intake and output. If a patient has evidence of cardiac failure or pulmonary edema, smaller amounts of concentrated dextrose solution are preferred to promote diuresis. Fifty to 100 cc. of 50 per cent dextrose solution should be given very slowly, and the patient should be carefully observed for further evidence of cardiac failure; this treatment is repeated at intervals of four to six hours, depending upon the patient's reaction. Hydration with 1,000 to 1,500 cc. of 5 per cent glucose in sterile water, given three or four times in a twenty-four hour period (total 3,000 to 5,000 cc.) is preferred for a patient with adequate cardiac compensation. Evidence of dehydration, which may be present in spite of edema, calls for large quantities of less concentrated solution. The injudicious use of large quantities of fluid, however, may result in cardiac embarrassment and acute pulmonary edema, and may aggravate the impaired renal function already present.

The intravenous administration of fluid should be discontinued when adequate oral fluid intake is possible. Fluids given by mouth should be high in protein and low in salt content. It should be remembered that milk is a solution containing 1½ Gm. of salt in 1,000 cc. and is undesirable for the toxemic patient. As much salt as possible should be eliminated from the diet.

The continuous administration of oxygen is of particular value for a patient who is cyanotic or exhibits respiratory or circulatory embarrassment.

General measures

Eclamptic patients require absolute quiet; all unnecessary external stimuli should be scrupulously avoided. The patient should be put to bed in a darkened room and all examinations and treatment deferred until the sedation has become effective.

The patient must be protected against falls or other injuries by constant supervision and by side guards on the bed. Forcible restraints should never be used. A mouth gag should be inserted, if necessary, to avoid injury to the tongue.

The head of the bed is elevated to promote easy breathing, and suction should be used frequently to remove blood, mucus, and fluid.

The constant direction of an experienced physician is essential to the success of treatment. Designation of responsibility to nurses or to inexperienced hospital personnel results in unnecessary fatalities.

Termination of pregnancy

It has been pointed out that radical measures to terminate the pregnancy immediately are associated with a very high mortality rate. It should also be noted that the common practice of inducing labor by methods which are traumatic and irritating to the patient, as soon as convulsions are apparently controlled, is almost equally bad. *"Haste makes waste."* It is far better to wait for a period of time after the convulsions are controlled and until the patient is considerably improved before attempting to terminate pregnancy. In most instances a prompt response to treatment is noted; in some, a period of several days may ensue before the blood pressure has returned to normal or near normal levels and the amount of albumin in the urine begins to decrease.

Labor should be induced by the simplest possible method and with the least possible trauma to the mother and child. The tendency to a spontaneous onset of labor in toxemia increases the probability of success with methods of medical induction. The use of a standard medical induction repeated several times is preferred to more radical methods. Each attempt at medical induction increases the chance that the next one will be successful.

If medical induction fails, simple rupture of the membranes is the most acceptable method of induction, when conditions are suitable for its use. The cervix should be partly dilated and effaced, the presentation longitudinal, preferably vertex; engagement must be present. Methods of induction will be discussed further in next month's article.

When convulsions occur earlier in pregnancy and a long, closed cervix is present, expert judgment is necessary. Often a cervix will change remarkably under the influence of several attempts at medical induction.

Cesarean section or hysterotomy should rarely be considered. These methods are indicated only when a long, firm, closed cervix in a nullipara, or other obstetric conditions preclude vaginal delivery.

Sedation and active treatment must be continued for a minimum of three full days after the patient has apparently returned to normal; undelivered patients should be kept under constant observation and treatment until three days after delivery. A fatal recurrence of convulsions is possible if treatment is abruptly withdrawn. Each patient must be carefully evaluated before another pregnancy is attempted. In many instances residual kidney damage is present, indicating that a basic renal lesion was the cause of eclampsia.

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

JOSIAH C. TRENT, *Editor*, M.D., F.A.C.S.

DURHAM

OBSTETRICS AND GYNECOLOGY IN AMERICA

II

SAMUEL BARD, 1742-1821

Although many medical practitioners of colonial America gave attention to the problems of obstetric science, it was long before obstetrics was accepted as a dignified and respectable branch of medical practice. As late as 1791, an established physician like Benjamin Rush could complain bitterly when a woman he was called to attend in a "fitt of colic" was found to be in labor. No midwife was forthcoming, so he made "a virtue of necessity" and gave his assistance, but most reluctantly: "My feeble constitution—

my Other extensive engagements—& my inclinations all revolt against practicing midwifery."[1]

Fortunately for the future of obstetrics, Rush's repugnance was not shared by some of his most distinguished contemporaries. One of his colleagues in Philadelphia, William Shippen, began in 1762 to give a course of lectures on obstetrics, numbering among his pupils professional midwives as well as medical students. John V. B. Tennent began a similar work in New York at about the same date; he was appointed in 1767 to the first professorship devoted to obstetrics alone, a chair in the newly established New York Medical School. From 1850 on, in Boston, James Lloyd made a specialty of obstetrics and trained many able pupils in the science. These pupils carried their knowledge and enthusiasm throughout the colonies, while still other American medical students, having acquired obstetric lore during their studies abroad, came home well equipped to increase the prestige of the neglected science. Samuel Bard was one of these, and one who made a notable contribution to the progress of obstetrics in America.

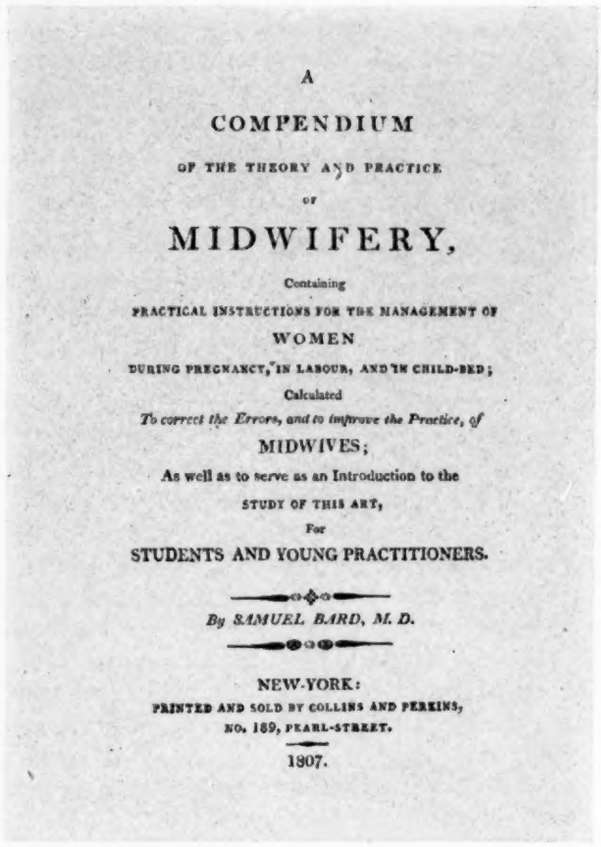
Born in Philadelphia in 1742, Bard was the son of Dr. John Bard (1716-1799), who achieved considerable distinction in his profession. He was the first American physician to report a case of extra-uterine pregnancy (1759), and the first to take part in systematic dissection for purposes of instruction (1750). He was the intimate friend and lifelong correspondent of Benjamin Franklin, who, in 1746, induced him to remove from Philadelphia to New York to take the place of two New York doctors who had died of yellow fever. In New York, therefore, young Samuel Bard received his early education, entering King's College at the age of 14. In 1760, his father sent him abroad to study medicine, but the ship on which he sailed was captured by a French privateer, and Bard lay captive for five months at Bayonne, his release being secured at last by Franklin. He then proceeded to London, where he served for a time as an assistant in St. Thomas' Hospital. Thence he went to Edinburgh and applied himself to medical studies there, graduating with the M.D. degree in 1765. The subject of his graduation thesis was "De viribus opii."

After a further ten months of study and observation in London clinics, Bard returned to New York and entered practice. He soon became a busy and uncommonly popular physician. An active mover in the organization of the New York Medical School, he became the first professor of the theory and practice of physic. His flourishing career met with a serious interruption, however, at the outbreak of the Revolution. Bard and his father maintained their loyalty to Britain and found it impossible, as Tories, to continue their professional lives. The father retired to his farm at Hyde Park, and the son went for a time to Shrewsbury, New Jersey, where he unsuccessfully attempted to establish a salt manufactory. When the British took New York, Samuel returned and resumed his practice, countenanced and assisted by eminent citizens who respected his ability and integrity. Later, when the American government was established in the city, Washington paid tribute to the same qualities by making Bard his family physician.

For nearly twenty years thereafter Bard carried on his work in New York, retaining his position as professor of physic when in 1792 the New York Medical School became a part of Columbia College; he was at this time appointed dean of the faculty of physic. He was instrumental in the founding of the New York dispensatory and of the city library. He became a visiting physician at the New York Hospital on its opening in 1791, and there devoted much time to obstetrics. In 1795 he took David Hosack into partnership with him and three years later retired to Hyde Park, only to return to New York after a short period to assist in fighting a severe epidemic of yellow fever. He contracted the disease himself, in so severe a form as to impair his health and prevent his again engaging in active practice. The remainder of his life was spent in retirement, but his interest in medical matters had suffered no eclipse, for it was in the years of quiet from 1798 onward that he conceived and prepared his classic work on obstetrics.

Published in 1807, with a cumbersome title (fig. 1) and a modest introduction, Bard's COMPENDIUM OF THE THEORY AND PRACTICE OF MIDWIFERY was immediately

1. B. Rush to Mrs. Rush, August 24, 1791; autograph letter in the author's collection.



A

COMPENDIUM

OF THE THEORY AND PRACTICE

OF

MIDWIFERY,

Containing

PRACTICAL INSTRUCTIONS FOR THE MANAGEMENT OF

WOMEN

DURING PREGNANCY, IN LABOUR, AND IN CHILD-BED;

Calculated

To correct the Errors, and to improve the Practice, of

MIDWIVES;

As well as to serve as an Introduction to the

STUDY OF THIS ART,

For

STUDENTS AND YOUNG PRACTITIONERS.

By SAMUEL BARD, M. D.

NEW-YORK:

PRINTED AND SOLD BY COLLINS AND PERKINS,

NO. 189, PEARL-STREET.

1807.

Fig. 1. The crowded title-page of the first edition of Bard's obstetrical classic, published in New York City in 1807. (From the author's collection)

popular. It went into three large editions, then, in an extended form, into two more. The author claimed but little for his work, describing it as "a concise, cheap book, containing a set of plain but correct directions for [the] practice in natural labours, and for the relief of such complaints as frequently accompany pregnancy and labour, or which follow after delivery."[2] He deserved far more credit than he sought, for his "plain directions" are enriched with compound interest in sterling common sense. Not the worst illustration of this statement is the fact that at the very outset, in introducing his book, Bard exhorts his readers not to trust wholly to books in acquiring a knowledge of midwifery, but to seek instruction and experience under established professors of the science.

A few passages from the COMPENDIUM will serve to show the wise and judicious tone of the whole. In discussing difficult labors, Bard remarked:

2. Bard, Samuel: A Compendium of the Theory and Practice of Midwifery, New York, Collins & Perkins, 1807, p. [3].

"A sedentary life and luxurious education, are the chief causes of all the evils which women suffer during pregnancy and labour. Keep children, therefore, out of doors, in constant exercise; allow them a full but plain and simple diet; and when grown up to be young women, let them live more agreeably to nature; let them avoid late hours and crowded rooms, indulgence in soft beds, and luxurious diet; let them walk, ride, and dance. And let them extend something like the same discipline to their minds and tempers; avoid all irritability of disposition, all affected delicacy and timidity; and in their place, cultivate calm and steady minds, and they will probably insure to themselves safe and easy labours."

(pp. 142-143)

He was reluctant to discuss the use of instruments and did not incorporate a section on this subject until the publication of the fourth edition. Repeatedly he warns his readers against any precipitate interference with the normal course of labor:

"Convinced that the use of instruments, and the introduction of the hand into the womb, as too frequently employed by the unskilful, is more desperate than the most desperate case of labour left to nature; it has been my wish to avoid, as much as possible, even mentioning these operations: still I have thought it necessary to describe the treatment of some lingering and difficult labours, and even of some preternatural cases; in all which, although I constantly advise the midwife to call for assistance, yet, (especially in the country) as what is better than her own is not always at hand; and much important time may be lost before it can be procured; the midwife ought to be instructed how to employ the interval to advantage."

(p. 4)

"Having greatly improved the instruments of his day, [Smellie] has described their use with great precision; and I own I am apprehensive that many of his readers may thereby be induced to suppose them equally safe in their hands, as they appear to have been in his—and hence be led to a more frequent use of them than modern practice has found necessary or safe."

(pp. 8-9)

"But the introduction of the hand into the womb, especially under circumstances of such alarm and terror as frequently accompany these cases, is an operation which requires great skill, joined to calm reflection, and steady resolution; and should never be attempted but by persons whose knowledge, experience, and fortitude qualify them for so arduous a task."

(p. 154)

Bard's COMPENDIUM is marked from first to last by a quality not too common in his time; the author is content to present the results of his long experience and observation in a plain and carefully outlined form, without building thereon an airy structure of theory. His purpose was to teach, and to this purpose he subordinated his own extensive learning. One cannot examine this little volume without becoming convinced of its fitness and great value as a means of instruction.

—J. C. T.

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FEBRUARY, 1947

STATE MEDICAL SOCIETY TO MEET AT VIRGINIA BEACH

For the first time in its history, the Medical Society of the State of North Carolina will be forced to hold its annual meeting outside the state. It is true that in 1937 the meeting was held during a cruise to Bermuda; but this plan was followed from choice and not from necessity.

At its record-breaking meeting last year, the Society voted to return to Pinehurst in 1947. After the meeting was over, however, the manager of the Carolina Hotel notified Secretary McMillan that he could not permit the Society to meet there in 1947. After this, Dr. McMillan did all that was humanly possible to find some other place in the state that had the hotel facilities necessary to accommodate the Society. He thought the problem was solved when the manager of the Robert E. Lee Hotel in Winston-Salem promised to arrange accommodations for 400 to 500 people. It was thought that, with so many populous cities within commuting distance, this number of beds would be sufficient.

Shortly after February 1 Mr. Frank L. Swadley, the new manager of the Hotel Robert E. Lee, had to admit that he could not promise to take more than 150 to 200 guests, and that the other hotels in the city could not accommodate more than 100, at the most. A letter from Mr. Swadley in the Correspondence Section explains the position of the hotel.

Since no other place in the state has made any better offer than Winston-Salem, Secretary McMillan was forced to find accommodations outside the state. The manager of the Cavalier Hotel at Virginia Beach has promised to find sufficient hotel rooms for the meeting, at the Cavalier and at some of the nearby hotels. Applications for rooms should be sent at once to the manager of the Cavalier Hotel, Virginia Beach, Virginia.

It was necessary to change the date of the meeting from April 28, 29, and 30 to May 12, 13, and 14. The hotel is being reserved for the exclusive use of the Society from Sunday, May 11, through Wednesday, May 14.

Let us hope that within the near future some of our cities will increase their hotel facilities, so that it will not be necessary for the Medical Society of the State of North Carolina to leave the state for its annual meeting.

* * * *

"THEIR MOTHERS' SONS"

To those who were brought up to think that the act of giving birth to a child automatically endows a woman with superhuman wisdom in rearing it, Dr. Strecker's book, THEIR MOTHERS' SONS[1], will come as a distinct shock. Most doctors, however, are prepared to accept his accusation that mothers are to a great degree responsible for the facts that 1,825,000 men were rejected for military service because of psychiatric disorders, that an additional 600,000 were discharged for neuropsychiatric reasons, and that a half million attempted to evade the draft.

Dr. Strecker makes a distinction between

1. Strecker, E. A.: Their Mothers' Sons, Philadelphia, J. B. Lippincott Co., 1947.

"mothers" and "moms." The latter term is applied to the mothers who are too selfish or too emotionally immature to allow their offspring to become mature men (or women).

"The future social behavior of a child has its beginning and is patterned in the conflicting sensations and emotions that arise from the early relationship between mother and child . . . If the give-and-take capacity is not developed, the child will fail to adjust himself to his own life and to society. As a result, the child never grows up. He remains emotionally immature. Weaning is as much a part of motherhood as is nursing."

The ways whereby "moms" keep their sons in bondage are many. Some do it by sheer domination; others by the martyr role, constantly reminding the son of the sacrifices Mother has made and is making for him. The martyr type is apt to use illness as a means of keeping her son close at hand. Others never relinquish the protective attitude. The various types of "moms," however, all accomplish the same end—that of keeping their son from ever attaining full maturity.

Dr. Strecker points out that the "moms" may wear pants, since some fathers are guilty of keeping their children dependent. There may also be grandmoms as well as moms.

Chapter 15 is the most devastating in the book. In it the blame for the large number of moms in America is placed on "the social system under which mom is allowed to flourish and flower." The most potent factor in the system, it is charged, is our educational system, "particularly progressive education." The lack of discipline, the encouragement of insubordination, labelled as "self-expression," and the elimination of wholesome competition, are all castigated by Dr. Strecker.

In contrast to "moms," mothers are given this distinguished service award by Dr. Strecker:

"The mothers of men who fought valiantly and returned unharmed and the mothers of men who were seriously wounded—who had lost a leg or an arm and could joke about it, and those who were honorably "wounded" by severe combat and operational fatigue—need no decorations or citations to memorialize the service of their sons. They brought into the world sturdy flesh, blood, and sinew and activated it with the spirit of indomitable morale. That is enough. They are mothers of mature men—men who can and who are willing to meet life whether it be a civilian or a military life."

It is to be hoped that THEIR MOTHERS' SONS may be read by thousands of mothers, especially young mothers, and that its lesson may be learned by those who need it.

TWO IMPORTANT QUESTIONNAIRES

Last November the Committee on National Emergency Medical Service mailed a questionnaire to more than 50,000 medical officers who served in World War II. This questionnaire was published, with editorial comment, in the *Journal of the American Medical Association* for November 23, 1946. The object of the questionnaire was to learn just what these men thought of the training they received, of the effectiveness with which their services were used, of the proportion of medical men in service as compared with those in civilian practice, and of the opportunities afforded medical officers to keep abreast of medical progress. It is hoped that the opinions thus received will be helpful in formulating plans for future medical emergencies, should they arise.

More recently another questionnaire has been sent to 5,000 physicians who remained in civilian practice, asking for their experiences during the war period, and giving them the opportunity to give their views on the conduct of future emergencies.

The great importance of both these questionnaires should be obvious. It is hoped that every man who received one will fill it out and return it as soon as possible.

* * * *

OUR MOST VALUABLE EXCHANGE

The most recent medical journal added to the exchange list of the NORTH CAROLINA MEDICAL JOURNAL is literally the most valuable one. It is issued bi-monthly, and the annual subscription price is quoted at $2400; single issues cost $500 apiece. This subscription rate, however, is in Chinese currency; the price in United States money is considerably less—$5 per year, or $1 per copy.

The name of this extremely valuable publication is the *Chinese Medical Journal*, the official organ of the Chinese Medical Association. The first two issues for 1946, which have just been received, tell a story as thrilling as the first number of the *Hawaii Medical Journal* that appeared after the Pearl Harbor tragedy. Although the January-February number marks the beginning of volume 60, it is the first to be issued from Shanghai.

For four years before the United States entered the conflict, China and Japan were at war. In his foreword, Dr. James K. Shen,

chairman of the Standing Committee of the Executive Board of the Chinese Medical Association, states that shortly after Pearl Harbor the *Chinese Medical Journal* "and its sister periodical, the National Medical Journal, which were then published at Peiping and Shanghai respectively, had to cease function, thus severing our only means of communication. We were faced with complete isolation from the rest of the world." In 1942, publication of these journals was resumed, under great difficulties. The *National Medical Journal* (printed in Chinese) was published in Chungking; two editions of the *Chinese Medical Journal* were published—one in Chengtu, the other in Washington. An editorial summary of the five-year hiatus in the regular activities of the Chinese Medical Association somewhat wistfully comments:

"The beautifully printed Washington edition is indeed a pleasure to read, after several years of poring over periodicals printed with eight-point type on paper intended for humbler use in better days."

The account of the trials suffered in the Chengtu office is heart-rending to an editor:

"Printing an English Medical Journal in the far interior of China is a hectic piece of labour. The rate of printing is one page a day. During the two weeks before Christmas and New Year, and especially before the Lunar New Year, the speed of printing was reduced to one page a week. Omissions and mistakes are numerous. Proof-reading is a trying task. The type-setters do not read English . . . At least every third night we have no electricity in Chengtu. Even when there is electricity, the light is hellishly dim especially before midnight."

Evidence of the hunger for medical knowledge that characterizes good medical men the world over is shown by this same editorial:

"During the war, Dr. C. C. Chang had been instrumental in editing in Chungking, the Current Medical Selections consisting of articles selected from foreign journals and reprinted **in toto** or in part. Our fortunate confreres in Free China were thus kept in close touch with recent developments abroad. However, many of us, especially those in the more isolated centres and in the occupied areas, are still ignorant of much of the newer knowledge acquired during the war . . . The only copies of medical journals available here today are a few back numbers of leading American publications, which can be bought only at exorbitant prices on the clandestine market, and they all sell like hot cakes. Some of the numbers of the Journal of the American Medical Association used in preparing the abstracts in this issue cost from CN $2500-5000 (US $1.25-2.50) each. This being the situation in Shanghai, the plight of our members in the isolated areas can well be imagined."

To our medical colleagues in China who have been carrying on so bravely under such trying circumstances, the NORTH CAROLINA MEDICAL JOURNAL extends its greetings and best wishes, and its congratulations on the excellence of the reborn *Chinese Medical Journal.*

* * * *

"GOOD-BYE TO THE GRAIN"

An editorial in the December issue of the *Journal of the Medical Society of New Jersey* will no doubt strike a responsive chord in the breasts of many practitioners—certainly of those beyond middle age.

"Four centuries of medical history have ground to a stop with the decision that the grain and drachm must follow the apothecary's scruple into the oblivion of obsolescence. Already the Pharmacopeia Committee has reconstructed its conversion tables with the Gram (not the grain) as the point of orientation. The American Medical Association press has abandoned the apothecary's system even as an alternate notation. As new drugs appear on the market, only the metric dosage will be printed on the label. And the current crop of medical students are giving their patients four cubic centimeters of liquid medicine and glibly quote the dose of aspirin as three hundredths of a Gram.

"At the risk of being called reactionary, we here enter for the record a modest word of protest. Perhaps some future antiquarian may recognize this as the last word ever spoken in defense of the apothecary's system. We insist that the grain is a more useful medical weight than the Gram or milligram. Most solid medications have a dosage on the order of 5 to 10 grains, the bromides, for instance, the chlorides, the sulfates, the salicylates, even the sulfa drugs. The corresponding metric dose is hard to remember and confusing to use: three tenths of a Gram or 300 milligrams. The potent alkaloids are dramatically pictured by their tiny fractions of a grain. Surely it is easier to remember and express the dose of atropine, for instance, as 1/100 of a grain than to say sixty-thousandths of a Gram. The grain is so comfortable a unit in medical posology that it must have been worked out by the apothecaries themselves precisely for that purpose. The Gram is rooted only in the empty notion of the weight of a mass of water in a cube a certain fraction of the earth's meridian on a side."

As long as forty years ago medical graduates were warned that they must learn to think in terms of the metric system, since to do so was riding the wave of the future. When the passing decades failed to bring about the proposed change, it began to seem that it might never take place. Apparently an irrevocable decision has now been reached, however. The NORTH CAROLINA MEDICAL JOURNAL agrees with the New Jersey editor in voicing a feeble protest against the passing of the grain. As his editorial concludes,

"A Gram can be a Gram of anything. But the grain has always been used to denote the fine things of life—its valued jewels and potent medicines. The grain indeed refers only to precious stuff; a grain of gold perhaps, a grain of medicine, a grain of common sense."

Clinicopathologic Conference

BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

The patient was a 47-year-old furniture worker who was admitted to the North Carolina Baptist Hospital for the first time on April 9, 1945, with chief complaints of nervousness and weakness of four weeks' duration. Five months prior to admission he fractured his leg and was sent to his local hospital, where he remained until about six weeks prior to admission. During this time he had a low-grade fever and complained of shortness of breath and nervousness. After he returned home his fever began to rise at night, and twice the rise in temperature was associated with chills. Two weeks before admission red spots appeared over the forearms and legs.

Past history: The patient had had poliomyelitis as a child, and for eight years prior to the present illness he had had dyspnea on exertion and palpitation.

Physical examination: The temperature was 103 F., the pulse 108, respiration 36, blood pressure 124 systolic, 70 diastolic. The patient was an obese, rather pale man, but did not appear to be acutely ill. The tonsils were hypertrophied, the teeth dirty and carious. The lungs were clear. The heart was markedly enlarged to the left; the rhythm was regular. Over the aortic area and extending down the left sternal border there was a grade 4 blowing diastolic murmur; a grade 4 systolic murmur was heard over the aortic area, and a grade 2 rough systolic murmur at the cardiac apex. The liver and spleen were not felt. A petechial rash was present over the feet, ankles, and both arms.

Accessory clinical findings: Aside from 3 to 4 white blood cells per high power field, the urinalysis was normal. The hemoglobin was 12.5 Gm., and there were 4,300,000 red blood cells. The corrected sedimentation rate was 38 mm. in an hour. The white blood cell count was 10,250, with 41 per cent segmented polymorphonuclears and 23 per cent non-segmented. The blood nonprotein nitrogen was 37 mg. per 100 cc. Total serum proteins were 5.9 Gm. per 100 cc. Blood chlorides were 564 mg. per 100 cc. The Kahn test and stool examination were negative.

An electrocardiogram showed left axis deviation and intraventricular block. The x-ray showed tremendous hypertrophy of the left ventricle of the heart, and bilateral pulmonary congestion. Repeated blood cultures yielded alpha hemolytic Streptococci, 20 to 30 colonies per cubic centimeter. *In vitro* tests showed these organisms to be completely inhibited by penicillin in a dilution of 1 unit per cubic centimeter.

Course in the hospital: The patient was given 20,000 units of penicillin intramuscularly every two hours, and within twenty-four hours the temperature was normal and the blood cultures were sterile. Ten days after penicillin was discontinued, however, his fever returned and the blood cultures again became positive. He was given penicillin again, with similar results, on two other occasions during this first admission. He was discharged from the hospital on July 17, 1945, with instructions to take a total of 4 Gm. of sulfadiazine per day.

Subsequent admissions: The patient was admitted to the hospital on three other occasions, each time with positive blood cultures, petechiae, chills, and fever. The physical findings in general were unchanged except for evidences of increasing cardiac failure and the finding of rather marked enlargement of the spleen. On the third admission the patient had lost about 40 pounds of weight. The laboratory studies yielded the following significant information: the urine showed 1 plus albumin, an average of 100 red blood cells per high power field, and numerous coarsely granular and red blood cell casts. The blood nonprotein nitrogen was 32 mg. per 100 cc. and the phenolsulfonphthalein excretion test showed 50 per cent total excretion in two hours. The urea clearance test was 13 per cent of the average normal. Blood cultures were again positive for alpha hemolytic Streptococci. Urine cultures were negative. Retrograde pyelograms showed suggestive, but not conclusive, evidence of pyelonephritis. During the third admission the patient was treated with penicillin for forty days, and all his remaining teeth were extracted. Following this therapy repeated blood cultures were negative, and the urine showed only 4-6 red blood cells and 4-6 white blood cells per high power field when the patient was discharged on December 12, 1945.

The patient took cold on the day after dis-

charge, and was admitted to the hospital for the fourth time on January 1, 1946, with a temperature of 102.6 F. and albuminuria (3 plus). The throat culture revealed beta hemolytic streptococci, and the blood culture was again positive for alpha hemolytic Streptococci. Repeated *in vitro* tests showed complete inhibition of most of the alpha hemolytic Streptococci in 0.08 units of penicillin per cubic centimeter.

In spite of adequate doses of digitalis and diuretics, along with a sodium-free diet and penicillin, the evidences of cardiac failure were progressive and the patient finally lapsed into coma and died one hundred and twenty-eight days after his fourth admission.

During the four hospital admissions the patient received a total of 84,000,000 units of penicillin, for the most part intramuscularly, but on three occasions by constant intravenous drip. The largest total daily dose was 360,000 units.

Clinical Discussion

DR. ROBERT L. MCMILLAN: The fundamental lesion in this case seems to have been subacute bacterial endocarditis due to the Streptococcus viridans. The patient exhibited aortic valvular heart disease (probably with mitral involvement), chills, fever, anemia, splenomegaly, petechiae, and blood cultures repeatedly positive for alpha hemolytic (green-producing) Streptococci. These facts establish the diagnosis. The possibility that the aortic valvular lesion was due to syphilis is rather remote; very few cases of bacterial endocarditis superimposed on syphilitic lesions of the aortic valve have been described[1].

Interest in this case centers on the fact that therapy failed, in spite of the fact that the infecting organisms were quite sensitive to penicillin, as was demonstrated by repeated *in vitro* studies. It is very likely that there was a focus harboring Streptococci viridans which was never eliminated by the penicillin. The teeth have long been recognized as such a focus, and improvement followed the removal of all this patient's teeth—wisely done while he was receiving penicillin. Tonsillar infection was present and was a possible source of trouble. There were no other demonstrable external lesions, and one must therefore consider the possibility of some lesion within the circulatory system. Buried collections of bacteria have been found in the subendocardium of patients with apparently healed bacterial endocarditis, who have died of heart failure or from some other cause. In this patient, however, the promptness with which the blood cultures became positive after omission of penicillin suggests the possibility of a mycotic aneurysm. In one patient treated here such a lesion occurred in the popliteal artery, and following its excision the blood cultures became sterile.

Treatment of subacute bacterial endocarditis may fail when the daily dose of penicillin is too small, or when therapy is not continued over a long enough period. The required dosage of penicillin varies from case to case[1], but errors are undoubtedly made in many cases by giving too little of the drug. In the absence of sensitivity on the part of the patient, there is apparently no such thing as overdosage. The necessity of giving ample amounts of penicillin over a long period of time has been pointed out by various authors[1,2]. Higher blood levels may be obtained with massive doses[3]. Since this patient's blood cultures were promptly rendered sterile by penicillin, it seems that the daily dose must have been adequate. Early in the disease, the duration of treatment may have been too short.

The most likely explanation of the therapeutic failure in this case, however, is the existence of a "feeder lesion," such as a mycotic aneurysm infected by Streptococcus viridans and inadequately affected by the penicillin.

On the last admission a new and probably significant finding was described. Beta hemolytic Streptococci were found by throat culture. Urinary abnormalities were greater, and progression in the cardiac failure was evident. Acute rheumatic myocarditis is not an uncommon finding in patients with rheumatic endocarditis who are in cardiac failure. The possibility of acute glomerulonephritis is also not unlikely. Both of these lesions may occur as hypersensitivity reactions to a beta hemolytic streptococcal infection, such as this patient had in the throat.

1. McMillan, Robert L. and Wilbur, E. L.: Staphylococcic Endocarditis Superimposed on Syphilitic Aortic Endocarditis, J.A.M.A. 109:1194-1195 (Oct. 9) 1937.
2. McMillan, Robert L.: Subacute (Streptococcus Viridans) Endocarditis Treated with Penicillin, Am. J. Med. 1:628-633 (Dec.) 1946.
3. Hunter, Thomas H.: The Treatment of Subacute Bacterial Endocarditis with Antibiotics, Am. J. Med. 1:83-92 (July) 1946.

Dr. McMillan's diagnoses

1. Subacute bacterial endocarditis due to Streptococcus viridans.
2. Old rheumatic heart disease, with aortic regurgitation and probably mitral valvulitis.
3. Mycotic aneurysm.
4. Congestive heart failure.
5. Glomerulonephritis and embolic nephritis.
6. Splenic, renal, and probably cerebral emboli with multiple infarctions.

Anatomic Discussion

DR. ROBERT P. MOREHEAD: The heart weighed 700 Gm., and there was marked hypertrophy of the left ventricle. The mitral valve was slightly thickened, and suggested an inactive rheumatic process. In the aortic valve, however, marked pathologic changes were encountered. The cusps of this valve were greatly thickened and covered with friable vegetations, which varied greatly in size and position. The first portion of the aorta was greatly dilated, and numerous atherosclerotic plaques could be seen on the surface. The spleen was decidedly enlarged, weighing 635 Gm., and numerous infarcts showing various stages of organization were present. In the kidneys also were circumscribed areas which for the most part represented healed infarcts. All organs were congested.

Microscopic examination revealed the usual changes encountered in the hearts of patients dying of bacterial endocarditis superimposed on rheumatic heart disease. In the aorta there was considerable mononuclear infiltration, which tended to be perivascular in distribution. Hyalinized glomerular loops of the type encountered in focal embolic glomerulonephritis were present in the kidneys. Capsular proliferation of the type encountered in subacute glomerulonephritis was also seen.

In summary, we can state that this patient suffered from bacterial endocarditis superimposed on rheumatic heart disease. As a result of embolic phenomena, infarcts were produced in the kidneys and in the spleen. It is difficult to say with any degree of certainty just what was the etiology of the aortitis. It is well known, however, that syphilis is the most common cause of aortitis in this area.

The value of penicillin in bacterial endocarditis is well established. I am of the opinion, however, that it is impossible to say that patients have been completely or permanently cured by this form of therapy. Considerably more time will be required to differentiate arrests from cures following therapy in this disease.

Anatomic diagnoses

Rheumatic valvulitis (aortic and mitral)
Vegetative endocarditis
Chronic aortitis with aneurysm formation
Infarctions of the spleen
Infarctions of the kidney
Focal embolic glomerulonephritis
Subacute glomerulonephritis
Chronic passive congestion of the viscera

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., LL.B.
RALEIGH

WORKMAN'S COMPENSATION: *Total disability does not mean a state of absolute helplessness.*

The question of what constitutes total disability occurs quite frequently in the practice of medicine, both in relation to insurance policies and in connection with compensation cases. There appears to be no reason why standards accepted by judicial tribunals should not be acceptable to insurance carriers.

In the case at hand a 66-year-old employee of a feed mill became entangled in an automatic elevator. The elevator carried him to the second floor of the plant, where his lower extremities were caught between the floor and the gate of the elevator. One of the bones of the left leg was fractured six inches above the ankle, and considerable trauma was done to the soft tissues of the right thigh. He spent a long period of time in a hospital. When he was allowed to return to work his condition made it impossible for him to work more than two weeks at a time. Eventually his health forced him to resign in order to seek less strenuous employment. He then attempted to perform light duties at a munitions plant and also at a meat packing establishment, but with little success.

After receiving $15.00 per week for a period of sixteen weeks and three days, the injured man petitioned the compensation

commission for further benefits, alleging non-recovery. The commission denied the plaintiff's request. He appealed to the superior court, where the judgment of the commission was upheld.

The cause finally came up for hearing upon appeal to the Supreme Court. This tribunal discussed certain facts interesting and instructive from a medical point of view. Total disability, the court stated, contemplates the loss of earning power, and in measuring such loss consideration should be given to the ability to earn wages, eligibility to procure employment generally, ability to hold a job, and capacity to perform the tasks of the work in which the person is engaged. The disability must of course be due solely to the accident or injury complained of, and not the result of other bodily infirmities. (It was urged, but not proved in this case, that the claimant's disability was due to a metabolic disorder incident to his age.) Continuing, the court warned that in the determination of total disability a claimant should not be penalized because of the fact that he attempted to return to work while he was still weak and suffering from the effects of the accident. (The defendant had contended that the injured man's attempt to return to work showed that he was not totally incapacitated.)

The decision reached in this case lays down the rule that total disability does not mean a state of absolute helplessness, but includes more than partial incapacitation, and means disability of an employee to earn wages in the same kind of work that he has been trained for or is accustomed to perform, or work of a similar nature, or any other kind of work which a person of his mentality and attainments could do.

The principles and standards set forth in the discussions concerning this suit should be helpful to physicians in arriving at a conscientious determination of total disability. In the present instance the decision was reversed and the case remanded for proper entry of the judgment in favor of the claimant. (V. 23 N. W. 2nd Series 262, Supreme Court of Nebraska.)

Veterans Administration is operating 123 hospitals now, but it eventually expects to have more than 200 in order to handle the anticipated load of veteran-patients.

Veterans who served in the armed forces during peace time are entitled to Veterans Administration hospital benefits only if they have service-connected disabilities.

TUBERCULOSIS ABSTRACTS

A Review for Physicians

Issued Monthly by the National Tuberculosis Association

Vol XX February, 1947 No. 2

CHEST films of thousands of persons have shown lesions suggestive of early tuberculosis. Even though a fair percentage of these persons have had no tuberculin tests performed, no sputum examined, and no history of symptoms taken to confirm or deny the suspicious film findings, many of them have been labeled as tuberculous. This is scientifically unsound, and we should now take stock of our diagnostic criteria for the clinical determination of early tuberculosis.

WHAT IS EARLY TUBERCULOSIS?

Millions of people in the United States have been examined by means of mass radiography since the early days of World War II. This new technique is rapidly achieving the long-sought goal of X-ray examinations of the lungs of the majority of adults in our country. This objective can easily be reached within five years if all our resources are mobilized and a national plan is executed with speed and efficiency.

Yet a word of caution must be given to prevent indiscriminate diagnoses of pulmonary tuberculosis on the basis of X-ray examination alone.

Specialists in tuberculosis rightly insist that, before final diagnosis, every attempt be made to obtain sputum specimens, and that such specimens be submitted to meticulous examination by direct smear of actual or concentrated sputum and, if this be negative, by culture or guinea pig inoculation. If sputum is not present, a stomach washing should be made and the contents examined by appropriate culture methods in laboratories that employ skilled bacteriologists. In cases of pleural effusion, the same procedure should be followed. This is possible only in an accredited laboratory which has been certified by some impartial central laboratory.

If, after such diligent search, no tubercle bacilli are found, the diagnosis should be limited to "suspected tuberculosis." This does not mean that many of the shadows found on the survey films are not the residue of a tuberculous process that once was active. Nor does it mean that the person should not be followed for several years to observe new evidences of disease activity. Nevertheless, to be scientific in our practice of medicine and to avoid needless distress, we should refer to such persons as "suspects" until such time as tubercle bacilli can be demonstrated. A firm stand of this sort should clarify confused thinking in mass radiography programs. To put it simply and candidly: do not diagnose pulmonary tuberculosis on the basis of an original X-ray film alone.

One must study "suspected" cases by means of a careful history, including recent or present symptoms which are characteristic of tuberculosis. For differential diagnosis it is essential to employ the tuberculin test, using the intracutaneous method properly applied and interpreted by an experienced person. In the presence of a negative tuberculin test, other reasons than tuberculosis must be found for suspected shadows, in spite of characteristic location and configuration. Indeed, even when a cavity is demonstrated on the film, a negative tuberculin test demands that some etiological factor other than

tuberculosis be sought as the cause.

The same criteria used in diagnosis must be applied even more rigidly in the treatment of tuberculosis, especially sanatorium care and chest surgery. Persons whose chest films show shadows, discovered by mass radiography, should not be rushed into the sanatorium simply on the evidence of X-ray findings. A period of follow-up by the physician or clinic will determine the presence or absence of tubercle bacilli in the sputum, gastric contents, or pleural fluid.

Because a social stigma unfortunately attaches to a diagnosis of tuberculosis, and personal harm through mental anguish can occur, restraint should be practiced in naming the disease before its actuality can be proved. Even those persons whose diagnoses are confirmed will profit by a period during which they may become accustomed to the idea that they have a serious disease. Such a practice will keep expensive sanatorium beds free for patients who are truly ill and will avoid unnecessary exposure of non-tuberculous persons sent to sanatoriums by mistake.

Persons who have tuberculosis which requires sanatorium care cannot be greatly harmed by short delay of treatment; in many instances the disease has been present for some time. The chest surgeon, too, should wait and watch with patience until tubercle bacilli are demonstrated as present in the lungs. This is particularly true of the too easily performed procedure of pneumothorax. Before the normal physiology of respiration is permanently changed by surgical attack, there must be strong evidence that such change and its attendant loss of function will be compensated for by the patient's future control of active disease.

There is yet no evidence in medical literature that the minimal lesion case with negative sputum, negative gastric lavage, or no sputum is benefited by sanatorium care. Rather it is a more realistic procedure to seek out and hospitalize the original positive sputum case which infected the minimal case so recently discovered.

We have placed emphasis in these remarks on the asymptomatic case with negative sputum or negative gastric contents. We must, however, be aware of and watch for "indolent" early tuberculosis. Caution is called for in the follow-up of early cases of tuberculosis that present vague findings and symptoms that are often difficult to elicit and interpret. This is the type of tuberculosis which British chest specialists call "indolent early tuberculosis," of whose prognosis we know little. Often such patients, when placed under sanatorium care, recover rapidly without surgical or special aid. Others deteriorate in the sanatorium in spite of the most expert medical skill and the finest facilities. One wonders if both types of cases would not have pursued the same courses undiscovered and unattended. We do not know why the body responds so indolently in these cases. Intensive investigation should help us find the answer, so that our follow-up program can be realistically directed and thereby be made more effective.

To sum up, no person should be labeled with the diagnosis of pulmonary tuberculosis on the basis of incomplete evidence. "Suspected tuberculosis" on the X-ray film must be corroborated by a positive tuberculin test and by positive bacillary findings. Let treatment be delayed and deliberated until all the facts are in and all the evidence is evaluated. If such a practice is followed, physicians will gain in accuracy and skill of diagnosis, and limited hospital resources will be conserved. Most important of all, the person suspected of having tuberculosis will be assured thorough study and scientific diagnosis and will be treated for tuberculosis only if the disease is actually present. Judgments based on positive and complete evidence will give a final verdict that protects the individual and the public health.

What Is Early Tuberculosis? Herman E. Hilleboe, M.D., Public Health Reports, September 6, 1946.

TREATMENT OF TUBERCULOSIS WITH STREPTOMYCIN

The Hinshaw, Feldman and Pfuetze report in the J.A.M.A., November 30, 1946, is up-to-date on this subject. By all means, read it, if you have not already done so.

CORRESPONDENCE

MEDICAL SOCIETY MEETING

February 12, 1947

Dear Dr. Johnson:

With regard to the North Carolina Medical Society meeting scheduled for Winston-Salem April 28th to 30th I feel it necessary to notify you at this time that should the attendance run as high as you have estimated, the hotels of Winston-Salem will be unable to accommodate a meeting of this size.

A great percentage of our rooms are occupied permanently here at the Robert E. Lee and have been for some time. I had hoped that some of these rooms would be released to us in order that we could be in a better position to accommodate the many requests which we have had for hotel rooms.

It is certainly with regret that I write this letter to you as I had hoped so much that we could have the North Carolina Medical Society meeting here, particularly at this time when the Doctors and the State are doing so much to promote medical care.

Should you find that your meeting will not be as large as you have estimated, I would appreciate greatly if you will get in touch with me at once to see if there isn't something that could be worked out to take care of your needs.

With kindest personal regards,

Very truly yours,

FRANK L. SWADLEY
General Manager

* * * *

INDUSTRIAL COMMISSION

Dear Doctor:

This is to advise that the Industrial Commission has accepted the proposal of the Special Medical Committee relative to charges for office visits as follows:

Ordinary first aid at the office.....$3.00
Subsequent office visits:
Dressings by doctor.....$2.00
Dressings by nurse, not attended by doctor $1.00

This ruling became effective on January 13, 1947.

The Commission wishes to call your attention to the fact that with this increase in office visit charges the medical profession will now receive 33 1/3 per cent more than the fee listed in the fee schedule and in many instances 100 per cent over that approved before the war.

Very truly yours,
T. A. WILSON
Chairman

BULLETIN BOARD

PRESIDENT'S MESSAGE

Dr. Coppridge has asked that the president's page this month be devoted to the following article by Dr. W. R. Stanford of Durham.

* * * *

NORTH CAROLINA'S GOOD HEALTH PLAN

W. R. STANFORD, M.D.

DURHAM

There has been much said regarding the Good Health Plan for North Carolina. Most of the things being said are calculated to show the people of North Carolina that the program is needed, and most of them have to do with promoting the hospital end of this plan. Of course, the hospital end of it is, at first glance, the more important, but when one says that, it is as though one said that the barrel of a gun is more important that the stock, because each part of this plan is essential to the whole plan.

At this point I could detail the six points of this plan, but it suffices to say that if you are going to build hospitals in every needy location in North Carolina you are going to have to have personnel to man them, and statistics show that you cannot get adequate personnel from the present sources.

There are three medical schools in North Carolina at present—the four-year schools of Duke and Wake Forest, and the two-year school of the University of North Carolina. The record shows that the University of North Carolina Medical School has furnished a large percentage of the doctors of the state. This is natural and proper, because the University of North Carolina is a state school—a school that caters to local students; it is not fundamentally a cosmopolitan type of institution; and this is one of the many reasons why it is necessary for the state to continue to support a medical school at Chapel Hill.

Since the day of the two-year school is past, then it behooves the state to extend this two-year school into a four-year school, and in so doing, show to the people of North Carolina that the state is able and willing to assume a job that it is proper for it to assume.

It is a reflection on the intelligence of any individual to contend that a foundation, or group of foundations, can do for our citizens that which the state cannot afford to do. It is just as proper for the state to educate its medical students as it is for it to educate its farmers, its engineers, its lawyers, or any of the many groups that it now educates.

Let these other institutions do everything they can to promote and extend their medical activities. Let them give all the students they can a medical education, and even if they do, and if the state goes ahead and does its duty and extends the two-year school into a four-year school, it will be a long time before North Carolina has enough doctors, because the program we have in mind is going to call for good doctors and lots of them.

Back of Program

It seems to me that the people of North Carolina might be interested in knowing some of the fundamental reasons back of this whole health program. The things they have heard about the program are actualities. Some of these actualities may have been slightly magnified. North Carolina has many health problems, but so has every other state in the union.

Our health promoters are correct in saying that North Carolina needs this program worse than many of the other states, and this is true because North Carolina ranks so low in so many fields of social endeavor. In recent years we have been known to brag about the money we have in the treasury, but money in a state treasury that fails to be of benefit to the people of the state is like

the miser's hoard, and just as useful. However, some of the fundamental reasons back of this plan are these:

All of you have heard for years about the "threat" of socialized medicine. The socially-minded people in this country, just as in every other nation, have been advocating some medical plan for all the people. Most of you are familiar with the Wagner-Murray-Dingell bill which these gentlemen have been trying to make into a law for the last several years. The ordinary layman must wonder why we are continually being threatened with socialized medicine.

The answer is not hard to find. If a person lives in town and keeps a filthy front or back yard, sooner or later this situation is going to come to the attention of his neighbor, and if he doesn't do something about it himself, pretty soon the neighbors are going to want to do it for him. This is the situation in medicine.

The medical profession cannot adequately answer the indigent patient problem unless hospitals and doctors are readily available to all our citizens. There are thousands of people in North Carolina, and in every other state in the union, to whom adequate medical attention is not available. One might ask, why not answer this problem by socializing medicine? There are a good many reasons why this is not the proper answer. Forty years ago the center of medical progress was in Europe. Today it is in America, and the thing which has placed it here is a free medical profession. No medical profession in the world has equalled or excelled the American medical profession.

Average doctor

There is something ennobling about the practice of medicine in an air of freedom. The average doctor who has to go out and compete with his fellow colleagues is inclined to make something very fine out of himself. However, if you were to put the average doctor on a salary, you would probably have only a very "sorry" hired man. We do not have socialized medicine in this country, but we have some examples of the salaried doctor; some of them, of course, are very fine, but there is a tendency in any organization in which they function for the practice of medicine to become a very routine procedure.

The doctors are trying to answer the indigent patient problem in North Carolina. There is nothing new about the idea. There are communities all over North Carolina that have facilities for hospitalizing indigent patients. It will be admitted that in many of these localities this hospitalization is inadequate, but as far as it goes, it is a complete answer to the indigent patient problem.

It is doubtful that any person in Durham, Forsyth, or Mecklenburg counties suffers for lack of proper medical attention, because these counties have facilities for hospitalizing these under-privileged people. So, I repeat that hospitalization by the state and county of these indigent patients is the answer to this problem, plus the care given these patients by a free medical profession.

What Plans Mean

This is what your Medical Care Commission for North Carolina plans for you: to make hospital facilities available for the poor people of North Carolina. This hospital plan will also make beds available for every group in the state. For the low-income groups who do not qualify as indigents, this plan offers voluntary hospitalization insurance; in fact, this insurance is available for every group able to pay for it, so that in the final analysis, medical care will be available to every person in North Carolina, regardless of color, race or creed, or financial status.

As intimated earlier, there are many other phases of this plan: the loan fund for worthy students who want to study medicine; the provision to plan for the medical education of the Negro; the plan for a psychiatric unit to be placed at Chapel Hill, which, if used correctly, should be a clearing house for our three other mental institutions.

It might be well to expand this thought a little, because the people of North Carolina have been conditioned by the many things which have appeared in the press regarding the deplorable situations at Raleigh, Goldsboro, and Morganton the last few years. This unit at Chapel Hill should not only be used to diagnose and treat the seriously sick mental patients, but it should be used as a postgraduate school for the staff of these three other institutions, so that within a period of a few years, each of the other institutions will be adequately staffed.

When these hospitals are adequately staffed, then the whole atmosphere of the

treatment of the mentally sick in North Carolina will take on a brighter aspect. Then, instead of ranking somewhere between fortieth and forty-eighth in the care of our mentally sick, as we are now, North Carolina could easily rank within the first ten states.

Study of Records

At the beginning of this article, it was intimated that the hospitalization phase of this plan has been most stressed, and it is this phase of the plan that the Hill-Burton bill is calculated to help. A study of the record shows that the hospitalization phase of our plan was worked out before the Hill-Burton bill was thought of. Even in those early days the importance of this plan was realized, because it is only by hospitalization that one can take real medical service to all the people. However, it takes more than bricks and mortar to make a hospital.

One has to have all the equipment which goes to make up a modern hospital, and while the bricks and mortar and the equipment are important, they are worthless unless you have the personnel to handle this equipment and treat the patients. In order to get this personnel it is necessary that the two-year school at Chapel Hill be extended into a four-year school. The doctors which this school will turn out, the nurses, the laboratory and x-ray technicians, the dietitians, the physiotherapists, and so forth, will go a long way toward supplying our outlying hospitals with needed personnel. As already pointed out, the psychiatric unit itself will help correct the difficulties we are having with our mentally sick; in fact, the whole medical school unit is the heart of this health plan.

Not a Device

It has been said many times by the opponents of this plan that this whole business is just a device to get a four-year medical school for the University of North Carolina. Nothing could be more incorrect. The University of North Carolina would undoubtedly get a four-year medical school even if this plan had never been thought of. It is not reasonable to believe that the state of North Carolina, which has already spent much money on a medical school at Chapel Hill, would fail eventually to finish the job, especially since the state has seen fit in the last fifty-six years to develop a fine two-year medical school. Right now, the work of this two-year school is being carried on in one of the finest buildings in the country and, in addition, under this same roof is one of the best schools of public health in the country.

This building will be a tremendous help in carrying on the four-year medical school that is planned at Chapel Hill; in fact, this building represents one of the many economic reasons why this school should be at Chapel Hill and not in some other city. No, this Good Health Plan is not a subterfuge to get a medical school for the University of North Carolina, but, on the contrary, this idea of a state-supported four-year school is the heart of a plan to give every person in North Carolina adequate medical care. The people of North Carolina are intensely interested in this plan.

Is there anything in the world more natural than for the people of the state to expect their university to be out in front for any plan which means as much to the welfare of all the people as does the present Good Health Program? As for the other two medical schools in the state, let us wish them Godspeed; but as said before, it is a reflection on the state of North Carolina to intimate that it is not financially able to carry out the duty it owes to its people.

The present plan advocated by the Good Health Program is the finest medical plan ever advocated by any group in our time, or any other time. If this plan goes through in North Carolina as it should, and if it is copied by other states, then this country will have brought adequate medical care to all its people.

News Notes from the State Board of Health

Although the vital statistics record for 1946 has not been compiled, the Division of Epidemiology has listed all cases of reportable diseases for the year. Throughout the year, there were only 9,970 such cases reported to the State Board of Health, exclusive of measles, which runs in cycles and was up last year. The total for the previous year—that is, 1945—was 15,374, exclusive of measles. As to measles, there were 9,011 cases reported last year, as compared with only 1,194 in 1945.

There were only 590 cases of diphtheria reported to the State Board of Health throughout 1946, as compared with 1,475 in 1945. There was also a heavy reduction in the number of typhus fever cases, the total for 1946 having been only 82, as compared with 159 the previous year.

The fight against malaria, also a controllable disease, continued, and there were 185 fewer cases reported in 1946 than in 1945. The total was 369, as

compared with 554 in 1945. Typhoid fever, against which there is a continuing war going on, fell off 28 cases last year; but there were 45 cases of rabbit fever—or tularemia—as compared with only 27 in 1945. There were only 9 cases of undulant fever reported for the year, compared with 15 in 1945.

There was a sharp decline in the incidence of whooping cough last year. In fact only 3,391 cases were reported in all parts of the state, against 5,834 in 1945—a decrease of 2,443.

The most conspicuous and convincing example of the effectiveness of preventive medicine is smallpox, of which there were only 2 cases among North Carolina's nearly 4,000,000 last year.

News Notes from the Duke University School of Medicine

Announcement of a Course in Medical Mycology

A month's course in medical mycology, under the direction of Dr. Norman F. Conant, is to be offered at Duke University School of Medicine and Duke Hospital, during July, 1947. The course will be offered every day in the week, except Sunday, and has been designed to insure a working knowledge of the human pathogenic fungi within the time allotted.

Emphasis will be placed on the practical aspects of the laboratory as an aid in helping establish a diagnosis of fungus infection. Insofar as possible and as patients become available, methods of collecting materials in the clinic for study and culture will be stressed. Work with patients, clinical material, cultures and laboratory animals will serve as a basis for this course. Also, an opportunity to study pathologic material, gross and microscopic, will be given those whose previous training would allow them to obtain the greatest benefit from a study of such material.

The number admitted to the course will be limited, and the applications will be considered in the order in which they are received. An attempt will be made, however, to select students on the basis of their previous training and their stated need for this type of work.

A fee of $50.00 will be charged for this course, upon the completion of which a suitable certificate will be awarded. Inquiries should be directed to Dr. Norman F. Conant, Duke University School of Medicine, Durham, N. C.

* * * *

Dr. Hans Lowenbach, associate professor of neuropsychiatry at Duke University Hospital and School of Medicine, resumed his work at Duke recently following a six months' assignment in occupied Germany for the purpose of gathering manuscripts on medical and related research, which had remained unpublished due to the war and post-war conditions.

While in Germany Dr. Lowenbach visited, under sponsorship of F.I.A.T. (Field Intelligence Agency Technical), schools in zones under United States, British, and French occupation, and in Berlin. More than 25,000 pages of original manuscripts in all fields of medicine, both research and clinical, were collected and microfilmed. Most of the papers concerned research hitherto held secret under German wartime restriction. Subjects were largely on general pathology, neuropsychiatry, and high altitude studies.

This material is now on its way to this country to be catalogued and abstracted, and will be immediately available to the public through the office of the Publications Boards, Department of Commerce, 16th and K. Street, Washington 25, D. C.

News Notes from the Bowman Gray School of Medicine of Wake Forest College

Dr. George Harrell, professor of clinical medicine, presented a paper entitled "A Bacteriologic Study of the Factors Affecting the Efficacy of Streptomycin Therapy of Urinary Tract Infections" at a symposium on "Research in Antibiotics," held in Washington January 31 and February 1 under the auspices of the Antibiotics Study Section, Research Grants Division, National Institute of Health. Authors of the paper were Dr. Harrell, Dr. E. Garland Herndon, Jr., Dr. Charles M. Gillikin, and Dr. Jerry K. Aikawa.

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Dr. Frank Lock, professor of obstetrics and gynecology, attended the meeting of the South Atlantic Association of Obstetricians and Gynecologists in Savannah, February 5-9, and presented a paper on "The Incidence of Psychosomatic Disease in a Private Referred Gynecologic Practice." Other members of the department who attended the meeting were Dr. James F. Donnelly, co-author of the article, and Dr. C. H. Mauzy.

News Notes from the North Carolina Tuberculosis Association

The 1947 annual meeting of the National Tuberculosis Association and the American Trudeau Society will be held in San Francisco, June 17-20.

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Mr. T. Hunter Bell, former treasurer of the State Association, died at his home in Greensboro on December 24.

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Walter S. Page, Jr., Seal Sale Director, has resigned to accept a position in New Jersey. He was succeeded by David E. Sigmon of Cooleemee.

State Board of Medical Examiners

The annual examinations of the Board of Medical Examiners of the State of North Carolina will be held June 23-26, 1947, at the Sir Walter Hotel in Raleigh. Applicants for licensure by endorsement will be interviewed on June 24.

Edgecombe-Nash Counties Medical Society

Dr. John G. Smith and Dr. R. D. Kornegay were speakers at the January meeting of the Edgecombe-Nash Counties Medical Society, held in Rocky Mount on January 8. Dr. Smith's subject was "Diverticulae of the Small Intestine," and Dr. Kornegay spoke on the "Use of Procaine in Acute Traumatic Injuries."

Forsyth County Medical Society

A dinner meeting of the Forsyth County Medical Society was held in Winston-Salem on January 14. A paper on "Diagnosis and Treatment of Surgical Lesions of the Colon" was presented by Dr. R. L. Sanders of Memphis, Tennessee.

Halifax County Medical Society

Officers of the Halifax County Medical Society for 1947 are as follows: President, Dr. Thomas J. Taylor, Roanoke Rapids; vice president, Dr. E. B. Smith, Enfield; secretary-treasurer, Dr. Matthew S. Broun, Roanoke Rapids.

Pitt County Medical and Dental Society

The regular monthly meeting of the Pitt County Medical and Dental Society was held in Greenville January 9, with Dr. J. M. Mewborn, Farmville, presiding.

The program consisted of a paper entitled "Operative Obstetrics" by Dr. W. H. Pott, Surgeon, Pitt General Hospital, and the "Annual Report of the Pitt County Health Department" by Dr. N. Thomas Ennett, Pitt County Health Officer.

The meeting was held at the Greenville Airport Inn, with Drs. S. M. Crisp and N. Thomas Ennett, hosts.

Warren County Medical Society

At the January meeting of the Warren County Medical Society, held in Warrenton, the following officers were elected for 1947: President, Dr. G. H. Macon, Warrenton; vice president, Dr. C. H. Peete, Warrenton; secretary-treasurer, Dr. H. H. Foster of Norlina. Dr. W. D. Rodgers was appointed to represent the society in the good health movement, and Drs. C. H. Peete and H. H. Foster were named delegates to the State Medical Society, with Dr. F. B. Hunter as alternate.

The society endorsed the hospital building program of the Medical Care Commission, but took no action in regard to the proposed four-year medical school at Chapel Hill. The society recommended that Dr. G. H. Macon serve as county physician of Warren County for a two-year period.

News Notes

Dr. Sherwood W. Barefoot, formerly instructor in dermatology and syphilology at the Duke University School of Medicine, has entered the practice of dermatology in Greensboro.

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Dr. J. Rush Shull and Dr. James E. Hemphill of Charlotte have announced the association of Dr. Harold S. Petit, recently of the resident radiological staff of Harvard University, in the practice of radiology.

Southern Society for Clinical Research

The first annual meeting of the Southern Society for Clinical Research was held in New Orleans, January 24 and 25. Among the speakers on the program were Drs. Alex W. Boone and Keith S. Grimson of Durham and Drs. David Caver, Victor Crescenzo, George Harrell, and W. C. Thomas of Winston-Salem. Dr. Joseph Beard of Durham was elected councilor for a three-year term, and Dr. Harold Green of Winston-Salem for one year.

News Notes from the American Medical Association

Meetings

The forty-third annual congress on Medical Education and Licensure convened at the Palmer House, Chicago, on February 9, 10 and 11, 1947.

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The second annual meeting of the National Conference on Rural Health was held at the Palmer House on February 7 and 8, 1947.

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Broadcasts

The Bureau of Health Education announces radio broadcasts over the Mutual Broadcasting System for twenty-six weeks beginning Monday, February 3, at 10:30 P.M. Eastern Standard Time. The title will be **"Doctor Graham and Family."**

The program will deal with a typical physician in general practice in an imaginary town of about 100,000 people, set in an agricultural county. There will be no medical speaker. There will be very little medicine in the program except as the doctor's practice affects his life. Primarily, the program will be interpretive rather than educational.

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The American Medical Association, in celebration of its centennial in 1947, is presenting a series of twenty-six N.B.C. dramatized broadcasts on the progress of medicine in the United States during the hundred years of the association's existence.

This is the twelfth annual series of A.M.A.-N.B.C. broadcasts. The series, which began on Dec. 7, 1946, is entitled "Doctors—Then and Now," and the theme is "A Century of Progress by American Medicine."

States with similar histories and similar general characteristics are grouped together so that in all twenty-five regions are represented. One broadcast is devoted to medical progress in each of these regions, and the twenty-sixth and closing week will deal with the one hundred years of the American Medical Association from a nation-wide standpoint.

Each broadcast is divided into two parts. The first part consists of a dramatization dealing with historic physicians and medical events in the region and the second part features a speaker representing the medical societies in that region.

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Associated Medical Care Plans

The officers and commission members have announced the opening of an office at 535 North Dearborn Street and the appointment of Frank E. Smith as director of Associated Medical Care Plans.

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Voluntary Health Plans

"Driving to complete the voluntary health insurance program for the care of the American people is the big job facing local, state and national medical organizations today," according to Thomas A. Hendricks, secretary of the Council on Medical Service of the American Medical Association. "More than eighty plans sponsored by medical societies in thirty-three states covering 4,000,000 persons are now in operation and the task has just begun."

Pamphlet on Rheumatic Fever

In observance of National Heart Week, February 9-14 the Public Affairs Committee, Inc., has issued "Rheumatic Fever—Childhood's Greatest Enemy," by Herbert Yahraes, the most comprehensive and readable pamphlet yet written on the disease that cripples and destroys more children of school age than any other disease, and that affects more than a million persons, young and old, in the United States.

"Rheumatic Fever—Childhood's Greatest Enemy," by Herbert Yahraes, is Pamphlet No. 126 in the series of popular, factual, ten-cent pamphlets issued by the Public Affairs Committee, Inc., nonprofit educational organization at 22 East 38th Street, New York 16, N. Y.

Third American Congress on Obstetrics and Gynecology

The program of the Third American Congress on Obstetrics and Gynecology, to be held September 8-12, 1947, in St. Louis, will feature general sessions for all groups making up the Congress as well as smaller individual group meetings and round-table discussions. A large Scientific and Educational Exhibit is being set up under the direction of Dr. J. P. Pratt of Detroit and a comprehensive Motion Picture Program is being arranged by Dr. John Parks of Washington, D. C. The committees assisting these doctors will review applications by prospective participants late this spring. Anyone wishing to make application for space in the Scientific Exhibit or for time on the Motion Picture Program may obtain the proper blanks from the office of the Congress at 24 West Ohio Street, Chicago 10, Illinois.

Postgraduate Courses in Radiology

The American College of Radiology and the Philadelphia Roentgen Ray Society are offering a postgraduate course on certain neoplastic and inflammatory diseases in Philadelphia, March 31 to April 4. The fee for the course is $50, and applications should be mailed to the American College of Radiology, Postgraduate Courses, 20 North Wacker Drive, Chicago 6, Illinois.

The American Society for the Study of Sterility

The third annual convention of the American Society for the Study of Sterility will be held at the Hotel Strand, Atlantic City, New Jersey, on June 7 and 8, 1947, preceding the annual A.M.A. Convention. Registration for the sessions is open to members of the medical and allied professions.

Additional information may be obtained from the secretary, Dr. John O. Haman, 490 Post Street, San Francisco 2, California.

American Foundation for Tropical Medicine

Dr. Neil Hamilton Fairley, Wellcome professor of tropical medicine of the London School of Hygiene and Tropical Medicine, received the Richard Pearson Strong Medal presented by the American Foundation for Tropical Medicine, for his work as chairman of the combined Advisory Committee on Tropical Medicine to General MacArthur in the Pacific during World War II. Presentation was made by Colonel Strong, U.S.M.C. (retired), for whom the medal and award was named, and who received it first in February, 1944.

United Nations Relief and Rehabilitation Administration

The international epidemiological reporting service formerly provided by UNRRA will henceforth be carried on under the auspices of the Interim Commission of the World Health Organization. The World Health Organization, which recently received a million and a half dollar transfer of funds from UNRRA, will continue aid to needy countries for training health personnel and in the control of tuberculosis, malaria and other diseases.

Consulting doctors, nurses and other health personnel will, however, remain as part of UNRRA's operating staff in China through March, and with the displaced persons in Europe through June, 1947.

New York Academy of Medicine Centennial Celebration

The year 1947 marks the one hundredth anniversary of the founding of the New York Academy of Medicine. The months of March and April have been designated by the Council of the Academy for special observance and commemoration. Throughout the Centennial the major theme will be concerned with the role of medicine in the changing social order of today.

Planned Parenthood Federation of America, Inc.

An overwhelming majority of American physicians approve of birth control for economic and social reasons, as well as to safeguard health, the first scientific, comprehensive poll on the subject reveals. The results of this poll were announced by Dr. Alan F. Guttmacher of Baltimore to 600 leading supporters of the Planned Parenthood movement. Dr. Guttmacher polled 15,000 physicians all over the country, and as a result of detailed answers to his questionnaire, he was able to present for the first time a documented analysis of how and why most doctors favor birth control.

Ninety-seven and eight tenths per cent of the physicians polled by Dr. Guttmacher approved birth control measures for health reasons; 86 per cent approved it for pregnancy spacing, and 79.4 per cent approved conception control for economic reasons. Marital adjustment was considered an indication for contraception by 72 per cent of the physicians polled. The West represented the most liberal medical opinion toward contraception, the South next, with the Central area in third position and the Northeast least approving.

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Dr. Alan F. Guttmacher of Baltimore, Md., and Dr. Abraham Stone of New York City were named as winners of the third annual Lasker Awards of the Planned Parenthood Federation of America by Dr. Robert L. Dickinson, spokesman for the Federation's Lasker Award Committee.

Presented to the Federation by the Albert and Mary Lasker Foundation, the Awards consist of a medallion and a $500 cash prize for each winner.

Veterans Administration

Veterans with service-incurred disabilities in thirty-two states, Hawaii and the District of Columbia may obtain free medical treatment from physicians of their choice under two different plans of the Veterans Administration home-town medical care program. Both plans enable veterans with service-incurred or service-aggravated ailments, upon approval of their VA medical officers, to go to the local physician of their choice for treatment of that service-connected ailment **only**.

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Veterans Administration has reported that 1,339 women war veterans were patients in VA hospitals or in other hospitals under contract to VA on November 30, 1946.

Women veterans are entitled to the same medical care as male veterans. In addition, they may receive hospitalization for non-service-connected disabilities in civil hospitals as well as in VA hospitals and clinics.

(BULLETIN BOARD CONTINUED ON PAGE 114)

AUXILIARY

SANATORIA BEDS

I address this article on the three Sanatoria Beds to the doctors' wives in the state who are not auxiliary members. Those of us who belong to the Auxiliary to the Medical Society of the State of North Carolina know that our projects alone make it worth while for us to be an organization. I feel that if everyone knew how the Auxiliary dues are spent there would not be a single doctor's wife in the state who would fail to send in her dues. If you happen to be in an unorganized county, you can become a member-at-large by sending your dues ($1.00) to Mrs. E. C. Judd, 2108 Woodland Avenue, Raleigh, N. C. Otherwise, look up your local branch treasurer and give her your dollar as soon as you have finished reading this article.

From dues paid, fifty cents of each dollar is used to make it possible for tuberculous North Carolina doctors and nurses to stay in a sanatorium without financial worry as long as necessary. We support three such beds—one in the Western Carolina Sanatorium at Black Mountain, one in the State Sanatorium at Sanatorium, North Carolina, and one in the Eastern Carolina Sanatorium at Wilson.

Each of our beds is now occupied by a nurse, but a few years ago a doctor occupied one bed for several years. There is a chairman for each bed who personally keeps in touch with our guests and tries to care for their needs. She also interests the branches of the Auxiliary in contributing to the Endowment Fund. Our chairmen at present are:

McCain Bed: Mrs. W. P. Richardson
Chapel Hill

Stevens Bed: Mrs. G. M. Billings
Morganton

Cooper Bed: Mrs. M. I. Fleming
Rocky Mount

The beds all have Endowment Funds, which are added to by the county auxiliaries or by personal gifts. The McCain Bed is our oldest bed and has the largest endowment. This bed is named for our beloved Dr. and Mrs. P. P. McCain. Following Dr. McCain's death in an automobile accident last November, many people sent donations to be applied to the Endowment Fund in his honor. This is the kind of memorial he would have liked most.

The beds are all named in honor of North Carolina doctors to show our appreciation of their supreme unselfishness and untiring efforts in the greatest of the professions.

MRS. B. W. ROBERTS,
Second Vice President and
Chairman of Activities
Durham

There is no doubt that the most important of all case-finding agencies in the fight against tuberculosis are its practicing physicians. It is almost always true that the family physician has the first opportunity not only to ascertain the presence of tuberculosis among the people, but also to give battle for the cure of the afflicted and to safeguard the other members of the family from the tubercle bacillus. For it is the family physician to whom most people go when troubled by signs of ill health.

The records in the chest diagnosis clinics prove that the physicians, if they are determined to do so, can perform a better job of suspecting and discovering active tuberculosis cases, year in and year out, than any other agency. Report of Comm. on Tbc. N. H. Med. Soc., N.E. Jour. Med., Sept. 26, 1946.

Six Antimalarials Reviewed by Dr. Rice in Puerto Rico

Clinical experience with six drugs now available for attacking malaria was reviewed by Dr. Justus B. Rice, vice-president in charge of medical research of the Winthrop Chemical Company, Inc., in a scientific paper presented before the recent convention of the Insular Medical Society in San Juan, Puerto Rico. The six drugs listed by Dr. Rice are Aralen, Atabrine, Quinine, Paludrine, Pentaquine, and Plasmochin.

Aralen was described by Dr. Rice as the drug of choice of all available drugs. It definitely cures falciparum malaria, often fatal form of the disease, he said.

"Aralen, Atabrine, Quinine and Paludrine all successfully attack the erythrocytic cycle of the disease, responsible for the distressing symptoms of all forms of malaria," Dr. Rice said. "Of interest chiefly to public health officials is Plasmochin, which does not cure, but which attacks the gametocyte cycle of the disease, limiting its spread by preventing mosquitoes from becoming infected.

"While clinical research has demonstrated that the exoerythrocytic cycle of malaria responsible for relapses in the vivax form of the disease is vulnerable to attack, Pentaquine, the drug which has been tested, has been found too dangerous for general use."

Pentaquine is still undergoing research, Dr. Rice said, but he added that it seems unlikely that it will achieve widespread use in its present form because of its toxicity to human red blood cells.

BOOK REVIEWS

An Integrated Practice of Medicine — A Complete General Practice of Medicine from Differential Diagnosis by Presenting Symptoms to Specific Management of the Patient. By Harold Thomas Hyman, M.D., Volumes I, II, III, and IV, and Index. 1184 illustrations, 305 in color. 319 Differential Diagnostic Tables. Price: $50.00 per set. Philadelphia and London: W. B. Saunders Company, 1947.

This is perhaps the most ambitious work yet undertaken for the general practitioner. It is, of course, impossible to read in a few weeks' time the more than four thousand pages which make up the set, but a good idea of its scope and practicability is to be had by the sampling process. On the whole, the impression thus formed was favorable. The numerous tables of differential diagnosis are quite helpful in the evaluation of a patient's presenting symptoms; the discussions of the etiology, pathology, clinical manifestations, and treatment of most conditions are presented in an interesting style, and are free from elaborate theorizing. The busy general practitioner should be able to review quickly the salient points about most of the common conditions for which his patients consult him. One feature which will appeal to many is that the author gives the remedies which he himself has found useful, and dismisses with refreshing brevity those which he has found useless.

The illustrations, especially the colored plates, are excellent and most helpful. This reviewer was particularly impressed by the views illustrating various conditions of the ocular fundus.

Throughout the work will be found helpful hints in the art as well as the science of medicine, which could have been written only by an experienced family doctor. The section on prognosis is a particularly good example. Prognosis is perhaps the most difficult part of medical practice, and Dr. Hyman's discussion of it should be of great help in mastering the subject. The factors which influence prognosis are all enumerated, from the nature of the disease to the disposition of the individual physician. There is a very helpful appendix dealing with the establishment of a practice and the personal problems of the practitioner.

As might be expected, the work is not perfect, and will doubtless be improved in future editions. For example, the rather common condition of metabolic craniopathy, or hyperostosis frontalis, is not mentioned, though Grollman and Rousseau found it in 1 per cent of the patients admitted to the North Carolina Baptist Hospital over a period of two and a half years. The description of pancreatitis is inadequate, and the only treatment recommended is surgery, in spite of the now generally accepted view that conservative treatment is usually to be preferred. Dercum's disease, or adiposis dolorosa, is also given too scant consideration, and obesity is overemphasized as a pathognomonic point.

In spite of these minor criticisms, the book can be recommended as more nearly covering the entire field of general medicine than any other this reviewer knows of, and as offering a unique approach to the study of one's patients.

The Treatment of Bronchial Asthma. By Vincent J. Derbes, M.D., Instructor in Medicine and in Preventive Medicine, Tulane University School of Medicine, New Orleans; and Hugo Tristram Englehart, M.D. Instructor in Clinical Medicine, Baylor University College of Medicine, Houston, Texas. With chapters by a panel of sixteen additional contributors. 466 pages. Price, $8.00. Philadelphia: J. B. Lippincott Co., 1946.

On the whole this is an excellent treatise on a very important problem. The statistical information prepared by Louis I. Dublin and Herbert H. Marks deserves special mention, for the socio-economic aspect of asthma, so obvious from case to case, has received too little attention from the mass standpoint. This presentation has no equal in any text with which this reviewer is familiar. The chapter on anatomy and physiology of the respiratory tract by Dr. George E. Burch also deserves special mention. Here the fundamentals so essential to a clear understanding of the pathologic processes involved in asthma are comprehensively presented, yet with a simplicity and clarity seldom encountered.

The chapter on cardiac asthma by Paul D. White is also excellent. Since this condition is not in reality a true asthma, some may question the propriety of its inclusion in this book. It is so frequently confounded with true asthma, however, and the differential diagnosis is at times attended with such difficulty that a chapter on the subject seems justified.

In the chapter on parasitic agents in the causation of asthma, the author does not stay very close to his subject. Fungi spores receive over-emphasis as causes of asthma, appearing equal in importance to the pollens.

In the chapter on non-allergic treatment, no mention of the antihistaminic agents is made. A number of errors, mostly technical, are to be found. On page 174, for instance, ragweeds are accorded the rank of a family—certainly not in accordance with accepted botanical classification. Such errors do not, of course, detract from the general usefulness of the book.

The Challenge of Polio. The Crusade Against Infantile Paralysis. By Roland H. Berg. 208 pages. Price, $2.50. New York: The Dial Press, 1946.

This small book is an interesting story of the problems of poliomyelitis. Beginning with an account of the erroneous ideas about polio current at the time of the 1916 epidemic, it carries one up to the advances of the past few years.

The review of the false hopes that have arisen in the past in regard to the prevention of polio by the use of vaccines serves as a reminder that we must take all discoveries with a grain of salt until they have been proved in the actual field.

The founding of the National Foundation for Infantile Paralysis is outlined briefly, and the National Foundation's work at the present time, both in epidemic aid and in aid in research, is summarized.

This is a book which will make much clearer the reasons that polio remains a baffling disease, but one which may be eventually controlled by the coordinated effort of the many research teams which are now being backed by the National Foundation for Infantile Paralysis.

The Essentials of Obstetrics and Gynecology. By William Albert Scott, B.A., M.B., F.R.C.S. (Can.), F.R.C.O.G. (Eng.), Professor of Obstetrics and Gynecology, University of Toronto; and H. Brookfield Van Wyck, B.A., M.B., F.R.C.S., (Can), F.R.C.O.G. (Eng.), Assistant Professor of Obstetrics and Gynecology, University of Toronto. 390 pages, 91 illustrations, 13 in color. Price, $5.50. Philadelphia: Lea & Febiger, 1946.

Drs. Scott and Van Wyck in the preface of this book state that it is an attempt to present the fundamentals of obstetrics and gynecology in a comparatively small compass. The authors have used as a basis for the text the lectures given to their students at the University of Toronto. They have succeeded admirably in condensing this bulky material, while discussing every important subject in some detail.

In some instances the methods of treatment advocated are different from those usually practiced in this country. For instance, the statement is made on page 134 that laparotomy and drainage should be carried out when there is definite evidence of purulent peritonitis which does not respond to chemotherapy, unless a bloodstream infection is present. In the management of the third stage, the authors advocate an attempt at Crede expression of the placenta one hour after the delivery of the child, and consideration of manual removal of the placenta in one and a half hours. The technique of removal is not described, and the importance of hospitalization and blood matching is not emphasized.

In general the text represents an excellent brief presentation of the subject.

In Memoriam

J. N. JOHNSON, D.D.S.

Resolved, That the members of the North Carolina State Board of Health adopt these resolutions in tribute to the memory of our late fellow member and distinguished colleague, John Nordham Johnson.

The Board has lost other distinguished and valued members. None is more genuinely mourned both as to personal loss and as to the loss of his wise counsel than is Dr. Johnson.

By his death the Board has lost a beloved associate and a great personality. Dr. Johnson was a member of the Board of Health for fifteen years, having served as vice-president since 1934. To the work and deliberations of the Board he brought a keen mind, a fine background of scientific knowledge, insight into the health needs and opportunities in our State, and enthusiasm and vigor in supporting the cause of public health and the activities of the State Board of Health. His memory and influence will remain as an inspiration to those who worked with him.

Resolved further, That a copy of these resolutions be spread upon the official minutes of the State Board of Health and that a copy be sent to Mrs. Johnson that we may extend to her and to the members of the family this expression of our sincere sympathy and our heartfelt condolence.

W. T. Rainey
G. G. Dixon
Paul E. Jones

BULLETIN BOARD

(CONTINUED FROM PAGE 111)

News Notes from the Office of the Surgeon General

Surgeon General Designates New Commandant of Army Medical Library

Colonel Joseph H. McNinch, M.C. has been designated Commandant of the Army Medical Library by The Surgeon General, succeeding Colonel Leon L. Gardner.

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Colonel Raymond O. Dart Named Director of the Army Institute of Pathology

Major General Norman T. Kirk, The Surgeon General, recently announced that Colonel Raymond O. Dart, M.C., has succeeded Colonel James E. Ash, M.C., as Director of the Army Institute of Pathology, Seventh Street and Independence Avenue, S.W., Washington, D. C.

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Improved Artificial Hand Announced

A new artificial hand which represents a major advance in the manufacture of prostheses for amputees has been announced by Major General Norman T. Kirk, The Surgeon General of the Army.

Both cosmetically and mechanically this hand is far superior to anything that has been perfected to date, according to Major Maurice J. Fletcher, Director of the Prosthetics Laboratory of the Army Medical Center which developed the hand.

* * * *

New Water-Purifying Tablet Developed by Army

A new tablet for purifying water in the soldier's canteen which is considered superior to the chlorine-type tablets used during the war has been announced by the War Department.

With iodine employed instead of chlorine, the new tablets make the drinking water less objectionable in taste and odor. Tests have shown that the iodine-containing tablet has greater sterilizing flexibility in that it can be used under a wide range of conditions. It also dissolves more quickly than its predecessor. This tablet was developed by scientists of the Army Medical Department, Quartermaster Corps and Corps of Engineers.

After examining a large number of different compounds, scientists found that triglycine hydroperiodide was a safe and highly effective agent. Additional tests of the new "tablet, water purification, individual, iodine," as the compound has been designated, will be carried out during the ensuing year.

Schering Award Winner Receives Prize

Mr. Bent G. Boving, first prize winner of the 1946 Schering Award, recently received from Mr. Francis C. Brown, president of Schering Corporation at Bloomfield, New Jersey a check for $500 for his winning essay on "The Role of Hormones in Sterility."

Second prize winner William O. Maddock, of Portland, Oregon, a student at the University of Oregon Medical School, has been presented an award of $300 by Mr. Harland Belscamper of the Schering West Coast professional service staff.

Third prize, a tie award, was won by Mr. Lioned Mapp of the McGill University Faculty of Medicine in Toronto and by Mr. Stonewall B. Stickney of Tulane University School of Medicine, each receiving duplicate awards of $200.